THE BUILDER

A RECORD OF ARCHITECTURE AND CONSTRUCTION.

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THE COMPENSATIONS OF LIMITATION.

THE average man escapes some pleasures and many pains which fall to the lot of those to whom Nature has been more prodigal, but his ends and aims may be said to be the same—the search after happiness, for after the satisfaction of the most material needs all human effort is expended in the same quest. It may be questioned whether unselfishness, as involving sacrifice, can exist, for the good man seeks his own happiness no less than his fellows, but secures it by actions which meet with the approbation of all men instead of actions they condemn, and so he, too, follows the line of least resistance as determined by his temperament.

The public benefactor is very often a man incapable of making personal friends, and if added to this limitation he possesses the desire of public commendation and immense wealth there is little reason why he should not endow mankind with public libraries and palaces dedicated to the virtues. We know of one philanthropist who spent the bulk of his fortune in the erection of educational buildings for his native town, and allowed his own mother to end her days in a workhouse. We do not allege that all public benefactors reach this height of altruism, but we admit to a preference for many whose warmth of feeling and generosity is more marked than the austerity of their virtues.

Architects, in common with all sections of the community, afford an interesting subject for the student of human nature. The flame of passionate devotion to the greatest of all the arts and the self-sacrifice of its votaries are subjects which would inspire the most lukewarm writer and fill many entertaining volumes. We should like an inhabitant of another planet to read the papers we hear at the meetings of professional societies, and then reconstruct out of his inner consciousness the personality of their authors. Were this possible, we are convinced we should obtain an image of an architect which would surpass fact and give us a model of perfection to strive after and, we may add, fall short of, whatever our actual attainments might be. It is a very human failing to give rein to our imagination when writing or speaking, and without a little justifiable conceit our efforts would frequently be even less successful than they are, and it is certain the faculty for self-deception is no inconsiderable asset in our lives when coupled with a just sense of the shortcomings of others. The moments when we see realities as they are are useful correctives, but normally it is more encouraging to imagine we are but little lower than the angels.

The sum of most architects' actual work candidly considered on its merits would hardly seem to be a great offering at the shrine of art, but the hopes that have inspired those efforts, even though disappointment result, render life interesting. The saying that every soldier of Napoleon's army carried a marshal's baton in his knapsack no doubt brightened the hopes and imaginations of many who remained insignificant privates to the end. And whereas success in purely commercial undertakings seems to bring with it no satisfaction beyond the actual money gained, the architect leaves his mark good, bad, or indifferent on the face of the land for many years to come. Sometimes, we fear, he gives that face what would, in popular language, be termed a "black eye."

Candour is always difficult in the face of admitted excellence, but if it were possible it would be interesting and instructive to discover if the mediocre architect really admires what is good, and whether his work represents the striving to attain a standard made impossible by his deficiencies or, on the other hand, is the unconscious preference for what is second or third rate.

We know from careful and studious reading what we ought to feel about the Parthenon or Reims Cathedral, but there are many who claim the title architect who probably get more pleasure from the contemplation of buildings which modesty prevents their mentioning to us in the same category.

Stevenson gives in the "Wrong Box" a picture of a drawing-master who considers the busts of ladies in hairdressers' shops as the highest conception of art, and more people than we think among the devotees of art have similar tastes without the artless candour of the author's hero.

We should like to know the full tale and number of those among the ranks of the profession who really admire a severely Classic building, and the number of those who profess to admire the same type of work but who, if hypnotised, would tell us they possess other convictions, and we imagine that the result would be to prove that the taste of a great majority of the profession has more in common with that of the general public than that of the initiated, and, in other words, they would really prefer a world devoid of excessive artistic refinements.

And, in proportion as we are limited in our understanding, we have compensation in the fact that the world as we see it is nearer perfection than it appears to the more cultivated, while, being architects and therefore artists, we have the satisfaction of feeling ourselves to be on a higher plane than that public whose tastes we really share.

If we are in this happy state we occupy a most favoured position, and may devoutly thank Heaven for the limitations which make our position so pleasant to us. Many architects in the century which is past and even some in the century which is still young really depend, if work involving artistic knowledge is given to them, on the aid of manufacturing firms of a decorative order.

The happy architect in such cases chooses and selects work which he is utterly incapable of designing himself, while any praise or admiration given to the decorative design is appropriated to himself. Such architects actually learn to think of the knowledge of those who serve them as in some mysterious way emanating from themselves, and so obtain compensation from a limitation of Nature or education.

There are many, too, among those who practise the arts who can imbibe knowledge but not taste. We have known a University graduate subsequently articled to an architect of standing who was genuinely impressed by the most vulgar buildings of a third-rate provincial town, and who, having to add a bow-window to a house, told the builder to copy a particularly offensive design from a jerry-builder's house. And this is not an isolated case, as many know by experience. But, in such cases, there is ample compensation, for, if the best works of art do not meet with full appreciation, the average hideous provincial town does offend susceptibility.

The domestic architect whose work is composed of a few small houses erected over a considerable period of time, and who devotes himself to producing something quaintly mediæval with infinite effort, is happy in his limitations. The section and detail of a beam over an inglenook will afford him thought and enjoyment for days, and if his client complains of the chimney smoking the small annoyance does not detract from his conviction that he has advanced the cause of art. He is utterly and happily blind to the position occupied by his work in relation to the universe or in the eyes of public opinion. Therefore we have reason to say, "Blessed are the compensations of limitation which surround many among us as with a wall, and blessed are they whose conceit is greater than their knowledge."

For knowledge inevitably brings in its train a sense of failure, and only to those to whom its acquisition becomes an interest in itself and who look on their own work almost as impartially as on that of others can it fail to bring acute discomfort. The limitations of life are the main dams against which the waters of happiness rise to a reasonable height, and happy is the man who is surrounded by them.

In the path of progress as we know it we must lose certain illusions, but that man is unfortunate who, losing one, fails to find another. We all wander through the ways of life seeing more or less indistinctly what lies before us, and it is well that this is so, for the more we analyse the smaller is the satisfaction which remains to us till we are often inclined to think that the exercise of our critical faculties, coupled with a perfect digestion, will give us the nearest approach to satisfaction which is obtainable.

It is fortunate for mankind that it should be, except at occasional moments, certain that an El Dorado exists; it is especially fortunate in art and other branches of human activity that we can never find an easy route to that El Dorado to find disappointment and disillusion; for the promised land, like other places, is probably in urgent need of a town-planning scheme.

NOTES.

Reims Cathedral Destroyed.

WE regret to have to record what is described as being the total destruction of Reims Cathedral, an act for which there was not the slightest justification, as the cathedral was behind the French lines, and its destruction appears to be a wanton act of barbarity, as it could serve no purpose of war. It is by far the greatest artistic loss which has yet occurred, as Reims is usually considered as the most marvellous work produced by mediæval builders in Western Europe, and is indissolubly connected with the history of the French people. Though the havoc worked in Belgium is far greater in extent, no building of anything like the same historic or architectural value exists in the whole of Belgium, and it can only be compared to such works as the Parthenon or Sta Sophia, the latter of which has been preserved and venerated by one of the fiercest and least-enlightened of Asiatic people waging warfare when the utmost barbarities were the rule rather than the exception. But the conduct of the Germans and Austrians proves that the barbarities of primitive peoples can be easily outdone in extent and savagery by the enlightened scientists of the twentieth century. No indemnities or other punishments can compensate for the loss of what is irreplaceable, but we trust that one of the minor conditions of peace will be the handing over of the contents of the great German Galleries at Munich, Berlin, and Dresden to the Allies, and their distribution among the nations which have been injured during the war. Future tourists will be interested in seeing the contents of the German Galleries in Belgium and Paris, and the Germans can be left to contemplate in peace the works of their own modern artists and to cultivate that "kultur" which seems to them so all-sufficient and superior to all that is regarded as valuable by the other nations of Europe.

The Liverpool School of Architecture.

WE have the prospectus of the Liverpool School of Architecture for the Session 1914-15, which contains full particulars of the very useful course afforded by the School, some of the recent work of which we publish in this issue. It will not be forgotten by those who are interested in architectural education that the Liverpool School is the pioneer of the many schools since founded in connection with the newer universities in different parts of the country, and that Professor Reilly has exerted a great and useful influence in emphasising the connection and bearing of wider education on architectural design and influence, which has naturally been more marked in the North of England than elsewhere. Though we feel that influence has been somewhat too marked in the direction of encouraging Post-Renaissance and Neo-Grec methods of design, we do not the less recognise the valuable service he has rendered to architecture as a whole. After all, if the student recognises at a later date that other types of design than those with which he has familiarised himself have greater merits he has absorbed the training and system which will enable him to make best use of them. The difference is indeed one of detail, as if a linguist had been giving more attention to one language rather than to another, for we know in such a case that he will find the acquisition of a second language easier because he has learnt another. He will, in other words, have learnt a system by study and thought which he can apply at his discretion afterwards. And we know that style is but a language and that thought and art alike can be expressed in many ways, great work having been produced in the past in all styles by those who had mastered essentials and possess that genius without which little is possible.

Town Planning at University College.

WE have before us the prospectus of the new courses of town planning at University College, which, we believe, will be very valuable to the profession. The Department has been established to provide a systematic course of training for architects, engineers, and surveyors who are desirous of acquiring expert knowledge in the laying-out of towns. Town planning is described as the most far-reaching and important of the applied arts; but till recently it has only been recognised and studied in a limited and incidental way. Both as an art and science it collates the broader issues involved in architecture and engineering and centralises the efforts of the social reformer, providing a centre by which social, economic, and artistic interests may be linked together as contributions to the organised growth of the city. It tends to check the excessive individualistic expression, the result of which is that cities have grown into a medley of building blocks typical of disorder and confusion. Such excess has accounted for the depreciation of whole districts. Since the passing of the Town Planning Act in 1909 local authorities have called to their service architects, engineers, and surveyors; but it is now recognised that its application requires specialised knowledge, and permanent advisory positions are being created for properly-trained men. The course will include lecture and studio work, and the lectures will include Town Planning, Civic Architecture and Landscape Design, Town Furnishing, Municipal Engineering, Hygiene, Arboriculture, and Municipal Law. We are confident that no better appointment could have been made than that of Professor Adshead, whose work proves his practical fitness for such a position, and there is endless scope for the exercise of town-planning skill in London and in our other large towns.

Education and the War.

NOW that our various schools of architecture are about to open again after the summer recess we are reminded that the general social disturbance caused by the war is likely to have an unfortunate effect on education, and that special arrangements may have to be made with a view to mitigating the evil. Indications seem to point to sadly-diminished classes during the coming winter, and to lines of progress which have had to be delayed or abandoned in consequence of the absence of so many students who have cheerfully given up their work and interrupted their education in answer to the call of their country. In any event it is to be feared that they will suffer educationally to some extent, but everyone will expect all possible precautions to be taken to ensure that their patriotism shall not prejudice their future. The Universities are taking steps in this direction, and no doubt the R.I.B.A. and other authorities have the matter in hand. The age limit for scholarships and prizes, for instance, might well be extended for those who have enlisted, so that they may get the same chance, or number of chances, as if they had stopped at home. Indeed, it might be worth while to consider whether it would be advisable to withdraw the competitions for such prizes as the Soane Medallion and Tite Prize, or the Travelling Studentships at the Academy, and not award them during the duration of the war. Apart from the question of travelling and sketching on the Continent during, or shortly after, hostilities, so many students are away that there is not the same credit in winning one of these prizes in their absence, and many students who were willing but unable to enlist might not care to compete in such circumstances. Considering that such prizes are only open to those of an age to enlist, and that those who win must be either unable or unwilling to do so, it is quite possible that the honour of being the winner of the Soane during the war is one which some students might respectfully decline.

South London Railways.

AN interesting and well-written editorial in the *Journal* of the London Society calls attention to the improvements which could be effected by the simplification of some of our South London railway connections, which were built in days when the South Eastern and London, Chatham, and Dover Railways were competing lines, and the substitution of other and more direct connections for either. The schemes outlined, which we shall refer to in detail later on, would mean the expenditure of a large capital sum, but would result in greater facilities for the public and also in a lessening of the cost of maintenance, upkeep, and control for the railway companies concerned. We often forget what is recognised with greater completeness in other countries that the first cost of "scrapping" may be repaid over and over again by a gain in efficiency. We see unreasoning conservatism at work in the continual willingness of institutes to pay large sums in altering buildings for purposes for which they were never intended, until a sum has been spent exceeding that which would have sufficed to completely rebuild, and this habit of petty economy in first cost and extravagance in the long run seems inherent in many of us. The only way to add to a building with economy is to plan out the whole of the alterations and additions which will be ultimately required. If the old structure will work in economically and reasonably as part of such a scheme it is worth retention; if not, it should be abandoned. And what is true of building is equally true of larger and more important matters; and, even if the time is not opportune for the improvement of our railway systems, it is useful to think out the lines on which these improvements should be based.

Ballroom Corridor.

The Lounging-Room.

Hotel Oakland, Oakland, California.

Messrs. Bliss & Faville, Architects.

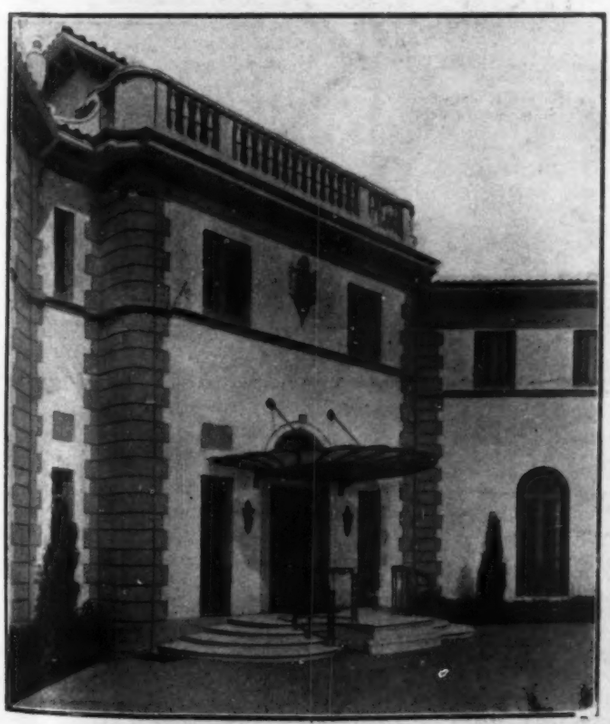
(From the *American Architect*.)

SOME RECENT AMERICAN ARCHITECTURE.

We give some illustrations of an interesting house at Pasadena, California, designed by Mr. Farquhar, which very well illustrates the point of view of the American client, which is in many ways alien to us. Like the French and other inhabitants of Continental nations, the American is appealed to by symmetry and dignity, not only in public but in private buildings. There is little attempt usually to give to a house a homely character simply because it is placed in rural surroundings. During the Georgian and post-Georgian periods we approximated in our ideas of architectural planning to the Renaissance methods of design practised elsewhere, but in the last century ordered planning has become the exception rather than the rule as applied to houses. Though the formal garden, with symmetrical methods of planning, has latterly found many advocates here, such a house as that we illustrate would appeal to few Englishmen, who are still obsessed by the recollection of what found favour in mediæval ages, which has resulted in a type of smaller domestic buildings to which we may almost apply the designation of picturesque dog-kennels. Why we should prefer low rooms, oak beams, ingle-nooks, and other constituent parts of the picturesque house has never been very clear to us, while we feel there are distinct advantages in a more measured and dignified type of design. The views which we reproduce show great knowledge of the use of detail and the value of proportion.

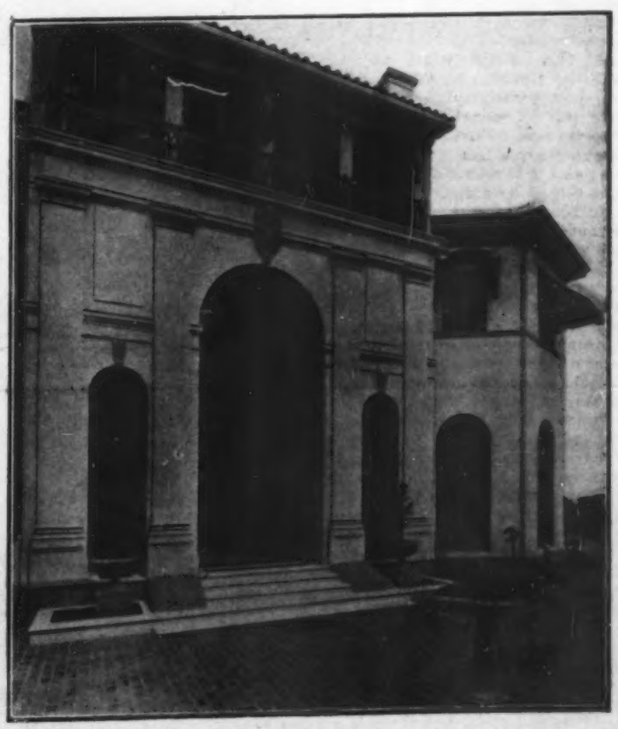
Our other illustrations are of the Hotel Oakland, Oakland, California, designed by Messrs. Bliss & Faville, who have produced one of the most carefully thought out and designed of modern hotels. We illustrated the plans and other views of this hotel in a recent issue, but we think that the additional details given will be of interest. In common with the best American work the skill of the designers is equal to their modesty, and there is no attempt to attract attention by eccentricity of detail or proportion. What has been good enough to satisfy the best architects of the Renaissance is good enough for the American architect, and a craving for new and wonderful forms is left to the effete continent of Europe.

We are enabled to reproduce these views through the courtesy of the editor of the *American Architect*.



House at Oak Knoll, Pasadena, Cal. : Detail of Entrance.

Mr. Robert David Farquhar, Architect. **(From the *American Architect*.)**



House at Oak Knoll, Pasadena, Cal.

Mr. Robert David Farquhar, Architect.

House at Oak Knoll, Pasadena, Cal.
Mr. Robert David Farquhar, Architect.
(From the *American Architect.*)

CUBISM IN ARCHITECTURE.

BY J. TAVENOR-PERRY.

THE paper prepared by J. P. Seddon and read fifty years ago before the R.I.B.A., dealing with the eccentric phases of the Gothic Revival, might well be repeated to-day with a variation in the theme and the peculiarities of so-called Classic work be set out and labelled; and, if such were attempted, the category would have to include what may fairly be termed "Cubism in Architecture." An illustration will best serve to explain what is intended by the term.

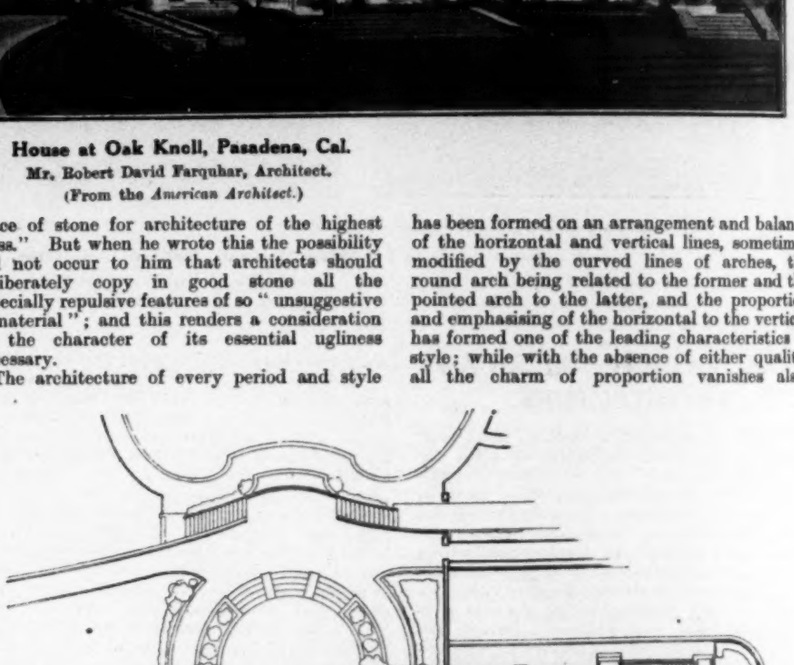
A recent addition to the well-known flour mills at Isleworth, consisting of a lofty square building in reinforced concrete unadorned with string-course or cornice, when seen through the river mists wears the aspect rather of a Norman keep, and so is not without some satisfactory effect; but seen in a clearer atmosphere or in bright sunlight the grey walls, which have not the greyness of antiquity, show in their nakedness the unsuitableness of the structure to the picturesqueness of its surroundings. Yet this is practically the ideal which those who aim at "simplicity in architecture" would have us desire; and this is the sort of thing with which some architects both in this country and in Germany have already begun to deface our streets.

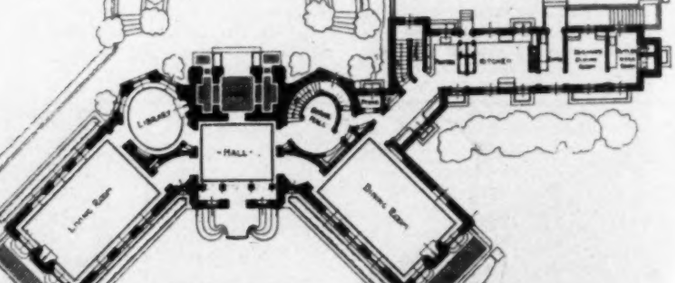
But this building which we have described makes no claim to be an example of architecture, though many equally ugly, and deliberately made so, do, since it is a purely utilitarian structure most unfortunately placed amid pretty surroundings, which suffer from its obtrusiveness; and it is rather with the buildings in our cities reared by architects of repute, and built in good Portland stone, cut into shapes imitative only of the rude squareness of cast concrete, with which we have to deal.

Those who followed the course pursued in the construction of the new Post Office extension in Newgate-street a few years ago can appreciate the growth of the craze. Its gaunt and massive carcass of reinforced concrete as it stood naked for months wailing for some decent clothing produced through the London fogs effects that might have tempted the pencil of a Piranesi or a Pennell, and was certainly not without its influence on some architectural observers. But to the ordinary layman its progress was a puzzle, and seemed to consist of raising walls made of sticks, stones, and mud mixed together in old egg-boxes; and when at last these strange casings were removed and the concrete exhibited in all its ghastly bareness he fairly concluded that an economical Government had reduced the architecture to the least possible dimension.

Mr. Statham, in the concluding paragraph of his valuable "Critical History of Architecture," says:—"The modern and increasing use of reinforced-concrete construction has been regarded by some as affording a basis for a new architectural style, but there is no sign as yet of anything worth calling by that name, nor does it seem likely that so intractable and unsuggestive a material could ever take the place of stone for architecture of the highest class." But when he wrote this the possibility did not occur to him that architects should deliberately copy in good stone all the especially repulsive features of so "unsuggestive a material"; and this renders a consideration of the character of its essential ugliness necessary.

The architecture of every period and style has been formed on an arrangement and balance of the horizontal and vertical lines, sometimes modified by the curved lines of arches, the round arch being related to the former and the pointed arch to the latter, and the proportion and emphasising of the horizontal to the vertical has formed one of the leading characteristics of style; while with the absence of either quality all the charm of proportion vanishes also.





House at Oak Knoll, Pasadena, Cal.
Mr. Robert David Farquhar, Architect.
(From the *American Architect.*)

The leading characteristic of concrete as of "cubic" architecture is its verticality, and the utter absence of any marked horizontal lines, for no external set-offs in the walling, wanting as they are in shade below, are perceptible, while the beams or lintels over the openings, relating as they do to merely accidental features of the elevation and not crossing it or affecting it as a whole, go but a very little way towards making up for the lost horizontality, while the nature of the concrete prevents the effect of the level striation which brick or stone gives to such buildings, as the brick towers of Italy or the stone and rubble Norman keeps.

Cubism seizes on all these uncomely features and, reproducing them in the finer material of Portland stone, exhibits them in all their monstrosity and disproportion as the eventual outcome of the Classic revival of the last few years, and the result of the utter abandonment of, and disregard for, those principles of Gothic architecture by English architects in which many of them were brought up.

The first thing that strikes one in connection with this style, if style it can be called, is the utter absence of mouldings and the hard square angles of all the projections unmodified by any softening of roll or chamfer, for such things are impossible in the egg-box architecture from which this is derived. But worse is the omission of nearly all cornices or string-courses, or their limitation to the smallest and least noticeable projection necessary to form water-tables or support gutters, though these last are generally hidden away behind square blocking courses. The only relief of light and shade on these fronts—for this sort of architecture most generally appears on the house fronts of our streets—is in the vertical buttress-like projections, alternating with narrow chases, and rarely broken in their height except by set-offs or the irregularly-spaced channels of rustica; and the effect of the verticality is increased, and will be aggravated in the passing years, by the weather stains, which only proper cornices would have obviated.

The few attempts which have been made to decorate this class of work have scarcely been successful, and have had the tendency rather to increase the effect of verticality. In one case nude figures have been squeezed into the chases between rectangular projections, where they appear to be seeking for such shelter as their condition requires and that a corner affords; but it is more common to treat the chases as enriched mouldings, but, for the sake of effect or economy, only filling in a short length of the "enrichment." This generally takes the form of a little string of drops, like a rope of onions, which not only appear in the chases, but are sometimes suspended by the sides of the windows, or even depend from the neckings of columns, where such a feature is by fortunate chance introduced, to the destruction of the delicate outlines of its entasis. Whence this decoration comes it is easy to determine, though the state of mind that can regard it as a satisfactory architectural adornment must ever be, to some, quite incomprehensible. It is no doubt copied from, or at least suggested by, the common "swags," not those rich in fruit and flowers in the manner of Grinling Gibbons, but the "composition" things which formed so characteristic a feature of the Adam's school of decorators, and is neither more nor less than the "business" end of one of these swags. As is usual in such cases, they are spoiled in their adaptation, for as part of the swag they evidently formed its counter-weights, and served to balance it in position, while amputated as they now are they are as meaningless as they are ugly.

Such is Cubism in architecture, and such are its decorations; and, if we are to take this as the last development of the ideal taught in the classical schools, we must feel that the "Hope of English Architecture," about which we heard so much more than forty years ago, is still "hope deferred."

RETIREMENT OF GOVERNMENT ARCHITECT, EDINBURGH.

Mr. W. T. Oldrieve, H.R.S.A., F.R.I.B.A., has retired from the post of Principal Architect for Scotland to his Majesty's Office of Works. His many friends may be interested to know that a six months' holiday, with a trip to New Zealand, which he proposed to take, has had to be postponed in consequence of the war, and that after a few weeks' rest he is to begin practice in Edinburgh as an architect and surveyor.

APPEAL TO THE ARCHITECTURAL PROFESSION.

THE Architects' War Committee has issued two circulars which we give herewith:—

"The Royal Institute of British Architects, feeling it to be their duty in this national emergency to arrange for such collective action by the architectural profession as may be found to be desirable, have, with the co-operation of members of other architectural bodies, formed an Architects' War Committee which is broadly representative of the whole profession in the United Kingdom.

It is felt that a contribution by the whole body of architects to the Prince of Wales's Relief Fund will not only secure a larger donation and enable all to help, however small a sum they are able to subscribe, but that the donation given in this way may encourage others to a like effort.

The Committee will be glad to receive contributions to this Fund.

While, however, it is most important that the National Fund should be supported, the Committee cannot be blind to the fact that there is likely to be a great deal of temporary distress among architects.

The Board of Trade returns for the month of August show the immense diminution of trade already caused by the war, which cannot fail to have a serious effect on the work of our profession. The funds at the disposal of the Architects' Benevolent Society are quite inadequate to cope with such an emergency. The War Committee therefore hope that all architects who are in a position to do so will give the most generous support to the Special Fund intended mainly for the assistance of architects and for other matters arising from the war which may affect our profession.

Donations should be sent to the Hon. Secretary the Architects' War Committee, 9, Conduit-street, Regent-street, W. Cheques should be crossed '& Co.'"

The Architectural Association: War Service.

SIR,—For the convenience of all members of the architectural and kindred professions and their friends who wish to respond at once to Lord Kitchener's appeal, the following arrangements with the various authorities have been made:—

Lord Kitchener's Army.

All men enlisting at Whitehall in any branch of his Majesty's Regular Forces, through the Architectural Association, will be sent to whichever regiment they may choose, provided it is not recruited to its full strength, and they will be kept together as far as their duties will allow.

Our President and a number of members have already been accepted for the Royal Engineers, where as sappers they will find their civil training gives them a great advantage. Those who prefer to join the cavalry, artillery, or infantry can do so, and I am arranging with the recruiting station in the City to send applicants to them for enlistment in the units being reserved for City men.

The term of enlistment is for the war, and the age limit is nineteen to thirty-five. Pay at the usual Army rates.

A special branch of the Motor Transport Corps is now being formed to collect and repair the numerous cars attached to the Allied Forces in the field. A limited number of recruits are required immediately.

Every man applying must be a mechanic, skilled in motor repairs, and he should state whether he can bring his own car or motor-cycle.

Pay for the lowest rating will be 3s. 3d. a day. As the Corps is expected to leave England shortly recruiting must be rapid, and men wishing to join, who have the necessary qualifications, should communicate with me at once.

Work in the profession is likely to become scarcer as the war continues, and to economise employment is most desirable. All assistants and others eligible for Kitchener's Army should not hesitate to join at once, leaving their berths to those who from age or health cannot be accepted and who may otherwise be out of work.

In this connection I understand that the Royal Institute of British Architects is arranging for the work of younger men in practice, who wish to join the forces, to be looked after during their absence.

Territorials.

Foreign Service.

The Foreign Service battalion of "The Artists" is at full strength, but a few picked men are being enrolled as a reserve, and they will be trained in the second battalion until vacancies occur.

Home Defence.

A second battalion of "The Artists" is being formed for Home Defence, and a few vacancies have been reserved for members of the A.A. and R.I.B.A. Members applying to me direct will be furnished with an introduction to the Head Recruiting Officer.

Men of the second battalion will live at home at present.

Term of enlistment, four years. Pay, 1s. a day and 2s. a day allowance until barracks are provided.

The Territorial Engineers are not at present recruiting for Home Defence.

The Architectural Association Volunteer Training Corps.

The A.A. Volunteer Training Corps, as originally proposed by Mr. Maurice Webb, is now being formed in connection with the Central Volunteer Training Corps Committee, of which Lord Desborough is Chairman. This Committee has received permission from the War Office to encourage and create training centres throughout the kingdom for men who are ineligible for Lord Kitchener's Army or the Territorials or who are prevented by special circumstances from joining the Forces.

The A.A. Corps, of which the Rifle Club will form the nucleus, is open to all architects and surveyors and members of kindred professions, the only qualification being that they are prevented from joining the Army as at present constituted.

The headquarters of the Corps will be the Central Electric Supply Company's Station, Lodge-road, St. John's Wood, where there is ample accommodation for miniature rifle practice, revolver practice, drill, and skirmishing.

Members can drill any day of the week except Sundays, and obtain masketry practice likewise except on Tuesdays and Thursdays.

There is an entrance fee of 5s. and a subscription of 2s. a month, but this latter is liable to be increased if the price of ammunition advances.

Rifles and revolvers of service weight are provided for musketry practice at the ranges, with an allowance of twenty-one rounds of ammunition per day free of charge, and members will be able to purchase further supplies at the range if required.

The general equipment of the Corps will depend on private effort to a great extent, but assistance will also be obtained from the Central Volunteer Training Corps Committee.

It is not proposed to limit membership of the Corps in any way except as stated above, and I should be glad to receive names of intending members as soon as possible.

All applying should state clearly why they are unable to join the Army, and when enrolled they will be furnished with a Special Pass to admit them at Headquarters.

ALAN POTTER, Hon. Secretary
A.A. War Service Bureau.

18, *Tufton-street,*
Westminster, S.W.

TENDERING IN WAR-TIME.

WHEN at the beginning of August war on a European scale suddenly broke out a situation was created in the commercial world of which no one had previous experience; consequently doubt and indecision prevailed for a while.

The declaration of a moratorium gave people time to consider the situation and undoubtedly prevented a panic.

Among supply merchants in the building trade an idea seemed at first to prevail that the state of war put an end to all their contracts for delivery of goods, and builders were rather hastily refused delivery under contracts made prior to the declaration of war.

Probably this arose from confusion of thought between goods sold for delivery and goods sold to arrive, and from a want of clear appreciation of the fact that if anyone quotes a price, with or without accompanying conditions, and such price is accepted in accordance with the terms of the quotation such acceptance constitutes a binding consract, war or no war.

However, an intimation from the buyer that unless delivery was made he would buy against

the seller in the open market quickly put an end to that little difficulty.

Builders, too, seemed doubtful as to whether they were bound to proceed with their contracts, especially when the moratorium enabled building owners to suspend payments of certificates issued against works executed and to which the builder is entitled by the terms of his contract.

Mere suspension of payment might have been got over if by lodging certificates with his bank the builder could have obtained credit there; unfortunately, the banks seemed as much in doubt as anyone else as to what was going to happen to the complex system of credit under which trading is carried on, for many builders complained that they were unable to get money on certificates and would have to stop work on contracts.

To add to these difficulties merchants would only supply goods in the new circumstances on a cash-with-order basis.

Some builders had acceptances falling due shortly after August 4. They were entitled to avail themselves of the moratorium; but what were they to do in the face of an intimation from a bank that if they did so their acceptances would in future be anything but acceptable? And they were thus faced with the alternative of having their credit destroyed if they took advantage of the moratorium, even though it was in company with such distinguished traders as banks, financial houses, railway companies, merchants, and stock-jobbers.

Fortunately, these difficulties were for the most part adjusted in the course of a week or two—all parties recognised that contracts in force prior to the war must be carried out at any cost.

There remained, however, several of a serious nature, such as the largely-increased price of certain materials, viz., timber, glass, and metals; the fact that merchants and manufacturers would only quote "without engagement" in certain classes of goods; the withdrawal of skilled men from many occupations; the uncertainty of obtaining delivery of goods due to interference with traffic transit; all of which interfered with any definite tendering on the part of builders. A new war risk thus arose in the building trade, and it became a question of whether it should be met by a substantial advance in the builder's prices to cover his risk or by the building owner assuming the risk himself. To this latter suggestion it was objected however, that, if throughout the contract the building owner was to bear the resulting differences in the cost of materials and labour due to variations in the prices supervening after the contract was signed, he might as well have no contract.

It was recognised that this might act as a serious deterrent to the undertaking of new works, and so the problem was considered with a view to drafting a war clause suitable for inclusion in the R.I.B.A. form of contract. Many suggestions have been made and some are still under discussion, but the principle underlying them is broadly this, that changes in price arising befween the date of the tender and the date of the signing of contract are properly subjects for adjustment at the time the contract is signed, provided satisfactor/ evidence is produced to show that the change is due to the existence of a state of war.

In this connection a suggestion has been made for the appointment of a joint committee representing architects, builders, and presumably it would also have to represent quantity surveyors, merchants, and manufacturers, whose business it should be to draw up a schedule of prices of goods in force prior to August 4 for use in determining questions arising as to increases in prices of goods due to the existence of a state of war.

The idea appears at first sight rather attractive, but on closer consideration it is apparent that in the first case the only general source of information from which to form such a schedule would be the books of merchants and manufacturers checked in certain cases by quotations received by builders or architects; that only a limited but unforseeable number of price controversies are likely to arise; and that such a schedule would have to cover a wide field, involving in the case of timber alone hundreds of prices, to deal with the multitude of marks and qualities, so that a great deal of ground would have to be covered uselessly, and that therefore the problem ought to be narrowed down to the investigation of prices actually the subject-matter of a difference of opinion between the parties to a contract.

The merchant and manufacturer might be called upon to justify his increased price before a representative joint committee, and might generally respond if he knew that failure to do so might involve the order going elsewhere; but in most cases the decision of the architect, assisted, possibly, by the advice of a quantity surveyor, on the documents before him would suffice to settle the matter.

The difficulty caused by clients availing themselves of the moratorium to withhold payments on certificates has also received consideration, and suggestions are under examination to the end that a clause should be added to the R.I.B.A. form of contract which will entitle the contractor to suspend performance of a contract where payment is suspended under the moratorium. Mere suspension of performance, however, is not enough where clients, owing to the new circumstances, would rather the contract were suspended indefinitely, so that provision has to be made for the termination of the contract in the event of the suspension proving unduly prolonged. Some addition is required also to the time-extension clause to meet delays caused through inability to obtain deliveries of goods.

There have been numerous suggestions made by builders to the effect that the Government should intervene to fix prices in the building trade on similar lines to what it did for the provision trade, but they have not found favour apparently. On the other hand, the Board of Trade have shown willingness to investigate cases of alleged undue enhancement of prices, and it is clear that the Government possess the power to seize goods so unduly held and dispose of them in the public interest, so that builders have a remedy at hand if they can prove their case.

When all is said and done there must be many cases where, owing to prices having sharply advanced, contractors are caught and badly nipped on existing contracts. Such cases call for sympathetic treatment now by architects and building owners, who, in their turn, may need sympathetic treatment at a later date should there occur a slump in prices as the result of a sudden termination of the war.

The present occasion is one of so rare and extraordinary a character that it deserves and should receive from everyone concerned sympathetic and liberal treatment, and no attempts should be made in any direction to take advantage of the situation to the detriment of fellow-citizens.

The greatest stumbling-block to renewed activity in building, however, is likely to be the difficulty of obtaining temporary financial assistance from banks for the purposes of erecting buildings, and until the moratorium can be brought to an end and Stock Exchange securities can be freely dealt in it is difficult to see where a remedy can be found unless the banks can see their way to resume the facilities they were in the habit of granting their clients prior to the war.

Building owners need not be alarmed at the idea of adjusting prices after tenders are in. Any provisions to that end must cut both ways, and if there are rises in prices of some goods others are likely to fall, so that on balance there will probably be little difference, especially if suitable substitutions of chaper materials for dearer ones are resorted to.

With regard to the position of builders or building owners who have pledged securities with their bankers against advances, it may interest them to know that, if the pledges are allowed to run on without any alteration of the rate of interest, the borrowers are protected under the Courts (Emergency Powers) Act, which remains in force during the war and six months afterwards, and under it lenders cannot call in loans or realise the security except on an application to the Court, which has power to stay any such action if it considers that the borrower is unable to repay owing to circumstances attributable, directly or indirectly, to the war (*vide Times* of September 21).

ST. GILES', CRIPPLEGATE, E.C.

The ancient church of St. Giles, Cripplegate, is being repaired under the direction of Mr. F. S. Hammond, Barbican, E.C., the general contractors being Messrs. Dove Bros., Ltd., Cloudesley-place, Islington, N. The tower is chiefly concerned, the decayed stonework being taken away and replaced.

PROFESSIONAL TRAINING FOR THE BUILDING TRADE.—V.*

THE building trade requires provision for the training of workmen, foremen, managers, and principals. In the preceding articles suggestions have been made for a modernised method of training apprentices to form the rank and file of the skilled labour required; from among these will come, by a process of selection, foremen and managers, and in many cases principals, too.

It is a curious fact that a building business seldom descends from father to son through several generations; the name of the firm may be continued, but under principals of other extraction, so that there is a constant influx of fresh blood into the ranks of employers in this trade.

This fact points to the need for a well-thought-out system of training, first by apprenticeship of the general mass of youths coming into the industry, and then, for superadding to those who have capacity, a higher training calculated to fit them for command. Only a few exceptional men can hope to reach the top and become employers; many halt in the intermediate grades between artisan and employer, and become foremen and managers.

The first question that presents itself is when and how is the process of selection to begin. Under the haphazard training of apprentices which has prevailed hitherto it rarely begins until after a youth is out of his time; there is no chance to show capacity for leadership, which is the fundamental factor for command, but under the group system of training referred to in the previous articles opportunity could be made to test the capacity for leadership by placing the elder youths by turns temporarily in charge of their group, the instructor acting as the employer would do in giving merely general instructions, and leaving the youths to grapple with difficulties and feel their feet by overcoming them as best they can.

So soon as a youth shows capacity for leadership he should be watched to see whether he has other qualities which complement it, such as keenness, reliability, and a real love for his work, resourcefulness, courage, and technical aptitude.

The apprentice instructor, under the guidance of his employer, is the man who ought to observe youths so selected, and report the result to the employer, who should make it his business to see that such likely boys are pushed on and spurred on to the necessarily exceptional exertions required to enable them to rise out of the ruck. Because from that time the chosen ones will have to supplement their group training by special training in constructional methods, in handling men, and ultimately, if ambitious enough and capable enough, in commercial and financial methods necessary to the conduct of business as principals. It is here that the greatest difficulty presents itself. The numbers of men chosen for command are comparatively small, and group training by individual firms becomes difficult if not impossible.

Constructional methods can be studied in technical classes, and a good deal of provision of a general character has been made by local public authorities in the larger centres of population for that purpose. Good work, too, is being done by the International Correspondence School, which enables youths who cannot reach technical schools to study at home.

The handling of men is largely a matter of practice, as a foreman of small gangs at first, and ultimately of larger numbers, and opportunity for that lies in the hands of the employer or his managers. The demand for good foremen is so great that any young man who shows capacity for directing work will get his chance if he seeks it.

A knowledge of commercial methods and accountancy can in the first instance be imparted in commercial classes, of which there are many, or by the Correspondence School already referred to; but this needs supplementing by practical office experience, which is more difficult to come by for the artisan who seeks to acquire such knowledge.

Perhaps the surest way would be to try to get a little evening work as assistant to a builder in a small way of business, having previously taken a course of book-keeping and correspondence tuition. A course of quantity-surveying is an absolute necessity for those who

* Continued from page 319.

aspire to get to the top. A general acquaintance with methods of finance is necessary, too, for the man who intends to become a master builder; natural aptitude is a great asset in this case, and must be supplemented by reading of standard works.

Some general knowledge of the principles of architecture and a study of the main features of the various styles is desirable, and can be obtained by the study of standard works and attendance at architectural classes where available.

It is evident that the higher branches of training for the profession of a builder involves a wide range of study, and, except for the favoured few who can afford a college and University education, must be sought by individual effort spread over a lengthy series of years. Probably a man could hardly expect to attain full competency before the age of twenty-five years.

At this present time our Government and the nation at large are seeking to capture a lot of business which has fallen into the hands of Germans, and no doubt while the war lasts, and for sometime afterwards, a good measure of success will attend our efforts in this direction; but if we consider why it is that Germans have captured so much of this trade a study of the methods of technical instruction which have prevailed there since 1871 will show that it is largely due to the way in which the youth of Germany are trained, and if that training contnues it will not be long before much of the trade lost to the Germans through the present war will be recovered by them. It is, therefore, advisable that our methods should be improved and our youth trained to hold what we may capture.

A recent report by the Education Officer of the London County Council (Mr. J. C. Small) contains some instructive and suggestive observations on trade and technical education in France and Germany. The following information is taken from it:—Germany aims at the building up of a great industrial nation, partly by the thorough training of the leaders as experts, partly by the training of the middle grade workers as thoroughly accurate and careful managers, and partly by the training of all grades of workmen and mechanics as skilled craftsmen and good citizens.

France aims at industrial excellence, partly by the training of highly skilled experts and partly by the training of those who should become the best workmen and the best foremen.

Britain aims at individual excellence, partly by offering many avenues of training and many chances for willing and persevering workers to climb all sections of the industrial ladder. Each of these aims is good, no one of them is complete.

The German method may be termed the long view, which must eventually lead that nation to maintain it in a foremost place as an industrial world power. The British method is more philanthropic than patriotic, but the bulk of the nation's workers are not catered for, and on them much of the material prosperity of a nation must depend. In Paris day trade schools train foremen and managers. Students who leave, after three or four years' training, immediately obtain employment at journeymen's or improvers' wages. A high standard of mechanical skill is secured. Practical work is carried out for real and useful purposes, though it is not sold. In consequence the schools are costly to maintain.

Compulsory continuation classes are now almost universal in all the large towns of Germany. There is a tendency to carry them from general schools to specialised schools on the bases of trades.

In Germany the apprenticeship problem is, if not completely solved, at least reasonably adjusted to present day requirements, and the compulsory continuation school is an integral part of this adjustment.

Voluntary continuation schools exist in France and Germany. The view is prevalent in Paris and Germany that the work done in evening classes can be of very limited value in the professional or trade training of juvenile workers.

One of the most prominent types of day school is the building school, which is found all over Germany. There are twenty-three such schools in Prussia and five in Bavaria. They are conducted on uniform lines in each State, with uniform curricula, and the students who pass through them readily receive posts at commencing salaries of £90 per annum.

(To be continued.)

COMPETITION NEWS.

It must be understood that the following paragraphs are printed as news, and not as advertisements; and that, while every endeavour is made to ensure accuracy, we cannot be responsible for errors that may occur.

The list of current Competitions is printed on page 305.

Abstract of Conditions for Federal Parliament House Architectural Competition, Canberra, Australia.

All the drawings required shall be drawn with pencil or pen, without wash or colours, except plain washes if desired, to indicate sections or to block in openings or to show different planes of distances. All lettering shall be of plain legible type. All rooms shall have figured dimensions. All drawings shall be cloth-mounted on stretchers. The only drawings to be submitted are:—

(1) Plan of each floor of Parliament House ...
(2) Longitudinal section of Parliament House ...
(3) Transverse section of Parliament House ...
(4) Three Elevations of Parliament House ...

(1), (2), (3), (4) Drawn to a scale of $\frac{1}{16}$-in. per 1 ft.

(5) Perspective from direction of "Terrace Court of the Reservoir," indicating relationship with proposed future departmental and Capitol Buildings. Scale $\frac{1}{16}$-in. per 1 ft. at nearest angle on picture plane.

(6) Detail of one architectural feature of the building, selection optional.

The designs are to be delivered to the High Commissioner for Australia in London or to the Federal Capital Director of Designs and Construction, Melbourne, Australia, on or before March 31, 1915.

Adjudication.—The drawings will be adjudicated by a jury of architects as follows:—

GEORGE T. POOLE, of Australia.
JOHN JAMES BURNET, of London and Glasgow.
VICTOR LALOUX, of Paris.
OTTO WAGNER, of Vienna.
LOUIS H. SULLIVAN, of Chicago.

The following premiums will be awarded:—

To first in order of merit the sum of			£2,000
To second	,,	,,	1,500
To third	,,	,,	1,000
To fourth	,,	,,	500
To fifth	,,	,,	250
To sixth	,,	,,	250
To seventh	,,	,,	250
To eighth	,,	,,	250

The Government will employ the competitor placed first by the jury as architect for the initial portion of the building; and, so far as the subsequent stages of the ultimate building are concerned, it is the intention of the Government similarly to employ him. Insomuch, however, as the construction of the ultimate building may spread over a number of years, this statement cannot be taken to bind the Government to employ the architect in these later stages.

The architect will be remunerated for his services as follows:—

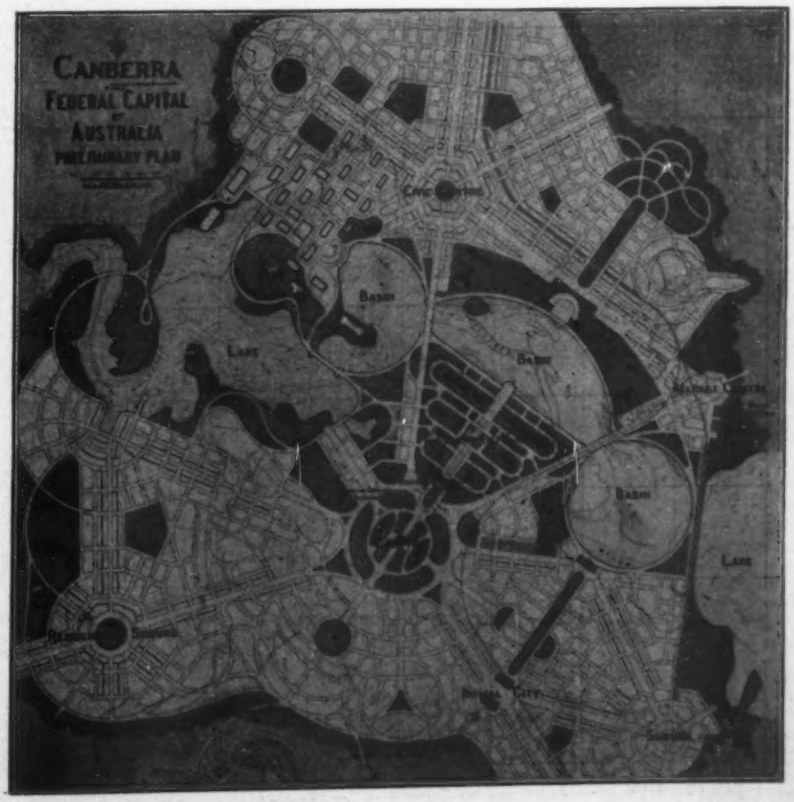
(*a*) If the employment includes personal supervision of the execution of the work he will be remunerated in accordance with the schedule of percentage charges sanctioned and published by the Royal Institute of British Architects as at the date of the first publication of this programme in the *Commonwealth Gazette*; or

(*b*) If his employment does not include personal supervision of the work he will be remunerated at the rate of 3 per cent. on the calculated cost of the actual work undertaken.

A plan of the central part of the city as projected indicates main features whose general relationship may be considered as an amphitheatre, with Mount Ainslie on the north in the rear, flanked on either side by Black Mountain and Mount Pleasant, all together forming a top gallery; with slopes to the water, the auditorium; with waterway and flood basin, the arena; with southern slopes reflected in the basin, the terraced stage set with monumental Government structures sharply defined, rising tier on tier to the culminating highest forested hill of the Capitol; and with grey Mugga Mugga, Red Hill, and the purple distant mountain ranges, sun-reflecting, forming the back scene.

The public groups in the design of the city are treated in a broad way because the extension of this important category of functions may go beyond any present basis of expectation. The general arrangement of the public functions and the preliminary plan are illustrated in the accompanying diagram, where they are first separated into those belonging to the Federation as a whole and those concerning only the city's immediate needs.

The architectural base lines for the Federal groups are an axis joining Ainslie with the hill of the Capitol, passing over the lesser eminence of the Parliament Hill between, and a co-ordinate axis from the peak of Black Mountain extending through the water basins. These axes are not thoroughfares essentially, but form park or garden frontage for all the important structures which can be developed with the least utilitarian limitations and afford the greatest ease and comfort for comprehensive observation of the Capitol. In general, the arrangement of all the Federal buildings on heights about two co-ordinate axes, their individual groups, set off by formal basins and garden features, forms one combination of parallel-set buildings, sufficiently unified to dominate all othntereser its in the city.



D 2

GENERAL—

Allow ample corridors, stairs, and lifts. Local wardrobe, lavatory and toilet provision for men and for women shall accompany all groups.

Heating and ventilating systems shall be provided throughout.

PUBLIC ACCOMMODATION—	sq. ft.
Entrance Hall giving access to Galleries, Exterior Observation Balconies, Roof Promenades, etc., and served with—	
Room for Doorkeepers	
Room for three Policemen	
2 Reception Rooms	
General Lobby, or Reception Hall, suitable for Ceremonials and Banquets, with direct connections, with doorkeeper, to principal Public and Members' Sections	8,000

PUBLIC AND MEMBERS' ACCOMMODATION—

LIBRARY—

Quarters so placed as to allow scope for expansion and to give access for the public separately from members; combining National and Parliamentary Libraries until specified capacity is outgrown, when independent Library quarters may be established elsewhere, as provided for in Government group reservation.

Administration—	
2 Rooms for Librarian	
1 Room for Assistant Librarian	
1 Room for Chief Cataloguer	
1 Room for Five Assistant Cataloguers	
1 Room for Binders	
1 Room for Accountant	
1 Room for Assistant, Attendants, Messengers (five)	
1 Room for receiving	
1 Room for packing	4,000
Books—	
Room for 250,000 volumes; 5,000 volumes of newspapers, preferably flat on roller shelves; and 50,000 volumes of documents	
Temporary accommodation for members only shall provide for 5,000 volumes books; 200 periodical files; 200 newspaper files	
1 Room for collection of rare books, plate, medals, maps, etc.	1,000
Public Accommodation—	
1 Periodical Room	
1 Reading Room	
6 Study Rooms (small, with provision for typewriting)	5,000
Members' Accommodation—	
1 *Periodical Room*	
1 *Reading Room*	2,500

MEMBERS' ACCOMMODATION—

Recreation and Refreshment Services (preferably on one floor)—	
1 *Billiard-room*, with room for three tables, with lounges adjacent	
Members' Dining Room or Rooms, to seat 250	
1 *Officers' Dining-room*, to seat 30	
1 *Press Dining-room*, to seat 30, or service to equivalent room in Press suite	
1 *Strangers' Dining-room*, to seat 20	
2 *Strangers' Dining-rooms*, to seat 10 each	
2 *Strangers' Dining-rooms*, to seat 6 each	8,500
1 *Kitchen with*—	
Scullery at one end, not separate	
Store-room	
Larder	
Refrigerator	
Stock Cellar	
Fuel-room	
Serving-rooms, between Kitchen and Dining-rooms, with Pantries	4,000
2 *Rooms for Stewards*	
2 *Rooms for Staff changing dress*	
Lavatory	
Bath	
1 *Spare Room for Staff*	1,500

LEGISLATIVE DRAFTING OFFICE—

2 *Rooms*	500

OFFICIAL REPORTING DEPARTMENT—

(Suite on same floor with, and as close as practicable to, the reportorial allotments in the two Session Chambers.)

1 *Room for Chief Reporter*	
1 *Room for Second Reporter*	
6 *Rooms for Assistant Reporters, two in each*	
1 *Room for Reference Library and Retiring*	
1 *Room for Typewriters' Retiring*	
1 *Room for Clerk and Accountant*	
1 *Room for Messengers and Stores*	
10 Rooms for Typewriting, minimum dimension 10 ft. by 10 ft. (Four of these may be in separate suite adjacent to House of Representatives, and two in separate suite adjacent to Senate)	6,000

NEWSPAPER REPRESENTATION—

Press Writers' Assembly-room—	
(Dining-room for Press (which see) may serve for this if not readily connected with Kitchen service)	700
13 *Suites* of 2 rooms each *assigned to separate news agencies* convenient of access to Reporters' Galleries in Session Chambers	5,000

POST, TELEGRAPH, AND TELEPHONE OFFICE—

1 *Office*	
1 *Room adjacent for switchboard*	500

CARETAKER'S APARTMENT—

1 Office	
1 Living-room	
1 Dining-room	
1 Kitchen	
2 Bedrooms	1,500

HOUSE OF REPRESENTATIVES—

Representatives' Lobby—	
1 *Room of general access*	2,000
Strangers—	
3 *Waiting-rooms*	
3 *Women's Retiring-rooms*	2,000
1 *Session Chamber—light and airy, to seat initial membership of 100, with lateral tier benches without desks, and* provide for ultimate expansion to seat possible membership of 300. Include—	
Speaker's Dais and seat	
Speaker's Gallery, to seat 150 persons	
Official Reporters' Desks on floor at centre table, or in gallery near floor	sq. ft.
Newspaper Reporters' Gallery, near or at front, set low with desk equipment for 30 reporters	
with desk equipment for 30 reporters	
Public Gallery, to seat 200 persons	5,000
Administrative Reference—	
7 *Rooms, accessory to Session Chamber (for arranging data required for immediate information in Sessions)*	
Speaker's Suite—	
1 Ante-room	
1 Reception and Dining Room	
1 Library	
1 Bedroom, with bath, toilet	
Government Whip—	
1 *Room*	
Government Supporters—	
1 *Room for assembling* (present) 100 to (ultimately) 300	
The Ministry—	
1 *Room for assembling and deputations, with lavatory and toilet*	
1 *Suite of 2 Rooms for Prime Minister*	
8 *Rooms for other Ministers*	
The Opposition—	
1 *Room for assembling* 50 to (ultimately) 150 members	
Opposition Leader—	
1 *Suite of two Rooms*	
Extra Parties—	
2 *Rooms en suite*	
Chairman of Committees—	
1 Room	
Committees—	
4 Rooms	23,000
Officers—	
Clerk—	
1 *Office*	
1 *Bedroom, bath, and toilet*	
Clerk Assistant—	
1 *Office*	
1 *Bedroom, bath, and toilet*	
Serjeant-at-Arms—	
1 *Office, convenient to Clerk*	
1 *Bedroom, bath, and toilet*	
Clerical Assistance—	
3 *Officers*	
Messengers—	
2 *Rooms, with baths and toilet accommodation*	3,000
Records—	
1 *Room for ready access to current files in standing cases* of face area of 1,500 sq. ft., for Parliamentary Papers, Bills, Acts, and Records	
Also storage vault space, for 15,000 super. ft. of standing case frontage, elsewhere available.	
Housekeeper's Quarters—	
6 Rooms	1,000

SENATE—

Senators' Lobby—	
1 *Room of general access*	2,000
Public Reception—	
3 *Rooms*	
2 *Women's Retiring-rooms*	2,000
1 *Session Chamber—a light and airy room, to seat initial membership of 50, with lateral tier benches, and* provision for ultimate expansion to seat possible membership of 150. Include:—	
President's Dais and seat	
President's Guests' Gallery, to seat 250	
Official Reporters' desks on floor at centre table or in gallery near floor level	
Newspaper Reporters' Gallery, near or at front, with desk equipment for 20 reporters	
Public Gallery, to seat 300 persons	
Insomuch as Parliament is opened by the Governor-General in this Chamber, provision should be made for accommodating on such occasions the members of the House of Representatives	5,000
Administrative Reference—	
7 *Rooms accessory to Session Chamber*	
(For arrangement of data required for immediate information in Sessions.)	
President's Suite—	
1 Ante-room	
1 Reception and Dining Room	
1 Library	
1 Bedroom, with lavatory and toilet	
Government Whip—	
1 *Room*	
Ministers—	
4 *Suites of 2 Rooms*	
Leader of Opposition—	
2 Rooms	
Extra Party—	
1 *Room*	
Chairman of Committees' Suite—	
2 Rooms	
Committees—	
2 *Rooms for assembly*	14,000
Officers—	
Clerk—	
1 *Office, convenient to President*	
1 *Bedroom, with bath and toilet*	
Clerk Assistant—	
1 *Office, convenient to Clerk*	
1 *Bedroom, with bath and toilet*	
Usher—	
1 *Office, convenient to Clerk*	
1 *Bedroom, with bath and toilet*	
Clerical Assistance—	
3 *Offices*	
Messengers—	
2 Rooms	3,000
Records—	
1 *Room for ready access to current files in standing cases* of face area of 7,500 sq. ft.	
Also storage vault for old files, 7,500 super. ft. of standing case frontage, elsewhere.	
Housekeeper's Quarters—	
6 Rooms	1,000

The Capitol is isolated and centrally focused in an extensive hill park. This building, which is intended to symbolise Australian sentiment, achievement, and ideals, will be used for the housing of archives, etc., and in connection with public ceremonials. Its isolation and the height of its site, 80 ft. above the Parliament House, ensure its supremacy as the objective feature not only of the Government group but of the entire city. The whole group of Government buildings is to be directed out from this one popular point along lines of sequence in function. The fact that Parliament is in two houses, in addition to the topographical situation, precludes giving to that structure a local significance. The plateau stretching between the hills of the Capitol and Parliament provides sufficient foreground for the former to set off the latter, over which, however, the court of departmental buildings on the succeeding long terrace below may yet be seen, while the view beyond is uninterrupted across the basin, public gardens, and along a broad pleasance to Mount Ainslie. Parliament building, on the brow of its hill, has an elevation of 50 ft. above the terrace of the buildings next below and is to be approached therefrom by wide ramps around the fountain end of a terrace reservoir. From this terrace court the Parliament edifice has a lofty setting, stopping the long axis of the reservoir. Crowned by the Capitol behind and supported on the flanks by the lower departmental buildings, it thus presents an opportunity for cumulative massing. The central terrace court of the Government group lies some 30 ft. above the lowest terrace of the water front, from which it is separated by the buildings facing the great basin, and to whose embankment access is given by ramps at the end and flights of steps between the structures. The court terrace, however, is extended on the roof of a central building of the waterway embankment, which projects into the basin crowned towards it by an open colonnade surmounting a slight bank of steps to afford an open forum, beneath which the structure serves as a launch entrance or "water gate."

It is to be noted that the roof of Parliament House, as well as the roofs of departmental buildings, will be important objects of view from the terrace outlooks above; also, that framing and maintaining the open axial view through the extent of the public groups are *desiderata*.

The ultimate cost of the Parliament House shall be considered to be within the sum of £1,000,000, but provision shall be made in the designing to allow for an initial housing as an integral constructional feature of the competed building, providing for the immediately necessary functions without external embellishment. The functions suggested as most necessary to the initial structure are printed in italics in the subsequent enumerations. The cost of the first necessary portion should not exceed £250,000. Economy in obtaining a maximum effectiveness with direct means will be an important element in the ultimate design, while satisfying the fundamental necessities in an economic arrangement of a "shell," or "core," for immediate purposes will be an important factor.

Accommodation.

The Parliament consists of two elective bodies, the House of Representatives and the Senate, to the former of which is responsible the administrative "Government," drawn from members of both Houses and comprising the Prime Minister and Ministers for various departments for the administration of all Government affairs. The essential requirements concern either the House of Representatives, the Senate, or both (general), provision for which should be in accord. Women are equally eligible with men for membership. Convenience of access to session chambers is required for summons of all members to division vote on three minutes' notice.

Housing Scheme and Tuberculosis Hospital, Southend.

Southend-on-Sea Town Council, at their meeting last week, considered a report of a Sub-Committee (the recommendations of which had been adopted by the Health Committee) on the housing of the working-classes. The Sub-Committee, having regard to the shortage in recent years in the borough of housing accommodation for these classes, recommended—(1) That competitive designs should be invited from architects residing in the borough for the erection of working-class houses on Corporation land in Ruskin-avenue; (2) that the Health Committee be authorised to draw up the conditions governing the competition, and to offer premiums not exceeding £25 to the architects sending in designs. In connection with the competition for designs for the erection of the proposed tuberculosis hospital the Sub-Committee recommended that premiums of 100 guineas, 50 guineas, and 25 guineas respectively be offered to competitors on the understanding that if one of the competitors is employed to carry out the work in accordance with his design the premium awarded to him will be regarded as forming an instalment of his commission. In moving the adoption of the Report as regards the housing scheme, Councillor Nerney, in reply to various questions, said that the conditions adopted by the Health Committee provided that the houses should be erected at a cost of £200. They asked for twenty-four to twenty-eight houses in blocks of not more than four, whilst the rest would be on all fours with the existing houses. The recommendations were all agreed to. As regards the tuberculosis hospital, Councillor Nerney said that the cost would be somewhere about £300 a bed, and as they were to have some forty beds the cost would be £12,000 to £14,000. They would not limit the competition in this case, having regard to the nature of the building. In the discussion which ensued Councillor Johnson moved that the Report be referred back in order that the Committee might limit the competition to local architects. Councillor Potter was of opinion that an open competition should be held. Replying to various criticisms, Councillor Nerney said that expert knowledge was required, and therefore he could not support the argument to restrict the competition to local men. If they passed the reference back they would have a long delay before they proceeded. After further discussion Councillor Johnson's motion was defeated, as was also a motion by Councillor Ward that the premiums should be £50, £25, and £10, and the Committee's Report was agreed to.

Public Baths, Washhouses, and Library, Deptford.

Having received a reference from the General Purposes Committee acting in its capacity as the Executive Committee of the Council in matters arising out of the war, urging the various committees of the Council to expedite works which they have under consideration, with a view to prevention of distress as far as possible, the Baths and Washhouses and Public Libraries Joint Committee have been considering the advisability of the Council abandoning the proposed architectural competition in connection with the baths and washhouses and public library proposed to be erected on the Evelyn-street site, and the appointment of Mr. A. W. S. Cross, F.R.I.B.A., as the architect for the buildings. If this proposal were adopted the Committee state it would be possible to proceed at once with the plans for the buildings, and thus avoid what they understand would be at least a delay of six months, the time which it is estimated would be occupied in carrying out the competition. Believing, therefore, that the public interest would be best served by the adoption of the suggested arrangement, and that the Council's interests regarding the designing of the buildings would not suffer thereby, the Committee has recommended the Council to rescind their resolutions regarding the holding of the competition and to employ Mr. Cross as architect, subject to the consent of the R.I.B.A. The Committee propose to pay Mr. Cross a commission at the rate of 5 per cent. upon the outlay in respect of the work carried out under his supervision.

The Committee is also recommending the Council to rescind a previous resolution limiting the expenditure on the buildings to £5,000, and to erect the buildings at an estimated cost of £10,000.

OBITUARY.

Mr. F. Kirk.

The death has occurred, at the age of fifty-four, of Mr. Frederick Kirk, architect, of Huddersfield. Mr. Kirk was the fourth son of the late Mr. John Kirk, who founded the firm of Messrs. John Kirk & Sons, architects and valuers, Market-place, Huddersfield.

BOOKS.

Mechanics for Builders. Part II. By EDWARD L. BATES and FREDERICK CHARLESWORTH. (London: Longmans, Green, & Co. Price 3s. net.)

THIS is a very good book for students of building construction who desire to study the theoretical design of constructional members without the necessity of working through all those portions of applied mechanics which have little or no connection with building work. It is intended as the second year course to follow on Part I. by the same authors and previously published, and if the student has no previous knowledge of the subject he would naturally not take up this present volume until the previous one had been mastered. The subjects treated in this advanced course include various explanations in connection with the centre of gravity, moment of inertia, and modulus of elasticity, and these explanations are clear and expressed in such manner that they should be readily understood by the reader. Beams are dealt with as regards bending moments, moment of resistance, and deflection, with several examples worked out to show the application of the formulæ, etc. Other chapters are devoted to columns, joints, retaining walls and arches, and the properties of materials, together with methods of testing the strengths, have not been overlooked. Reinforced concrete has had four chapters allotted to it at the end of the volume, and we are disappointed to find that the standard notation recommended by the Concrete Institute has not been adopted by the authors, and as the draft regulations of the London County Council are dealt with in the form of extracts it will be obvious that the failure to adopt the standard notation is a serious fault in a book intended for students, where it is essential to avoid all confusion and complication. Generally speaking, the book is well presented, with clear explanations of the theory, and it can be recommended as a sound treatise which is on somewhat diffe ent lines from the majority of text-books on this subject, and a thorough study of the matter given should provide an excellent groundwork in mechanics as required by the building student.

Continuous Beams in Reinforced Concrete. By BURNARD GREEN, A.M.Inst.C.E. (London: Chapman & Hall, Ltd. Price 9s. net.)

OWING to the rapidly increasing use of reinforced concrete in all classes of building work the question of continuous beams is one which assumes much importance, and there is need for a simple and complete treatise of this subject. We are somewhat disappointed in this volume, however, as, although a great deal of work must have been entailed in its preparation, the matter is not presented in a manner which is clear, and it does not lend itself to the rapid calculation of bending moments and shearing forces which we understand was the purpose the author had in mind during its preparation. The "Theorem of Three Moments," which is rather a difficult subject, is well explained, and Chapter II. and other portions of the text contain interesting matter; but the necessity and value of the numerous diagrams throughout is not apparent, as they would, in our opinion, be seldom referred to. The author apparently is well versed in his subject, which is an important one, but the book can hardly be considered to be an ideal one, and it is to be hoped that in the event of a new edition being prepared the matter will be rearranged and presented in such a manner that its value can be more readily appreciated by the reader.

Building Supervision. By GEORGE W. GREY, P.A.S.I. (London: E. & F. N. S o ı, Ltd.)

THE supervision of building work is a serious and responsible duty which is often undertaken in a careless and indifferent manner until some trouble occurs, and then only is the seriousness realised by the supervisor, and the reading of this little book should be somewhat of a revelation to many readers. The author deals with the subject in a thorough and interesting manner, and does not hesitate to put matters very frankly, whether describing the tricks of the speculative builder or the possible shortcomings of a clerk of works. Advice is given on the procedure of the work and the inspection and condemnation of work and materials, with valuable hints of the points to be noted

during inspection. Many pages are devoted to materials, with notes as to their possible defects and tests that can be adopted on the site are described.

Those who have had no experience in supervising work on behalf of a mortgagee will be somewhat startled by some of the tricks which are given as examples of the speculating builder's enterprise, and as these examples are given from actual cases it emphasises the necessity for careful and conscientious supervision and inspection. The text includes notes on the supervision of reinforced concrete, and is therefore quite up to date, and it can be recommended as a well-written and comprehensive work.

MAGAZINES AND REVIEWS.

The September number of the *Architectural Record* (New York) does not contain any work of outstanding merit, though its contents are, as usual, interesting. Much space is devoted to Messrs. Cram, Goodhue, & Ferguson s Fourth Presbyterian Church, Chicago, a somewhat over-emphasised group of Gothic buildings surrounding three sides of a quadrangle, the fourth side of which is formed by an arcade. We feel that, good as they are, these traditional Gothic reproductions are somewhat out of place in the American Continent, where we should prefer to see inspiration drawn from work of a later character, but of their kind there is little work of greater merit being done here. Our best architects, however, give a greater individuality to their Gothic than is the case in corresponding work in America, and we could wish that the work of Messrs. Tapper and Gilbert Scott were better known on the other side of the water.

Two good houses are illustrated, the architects being Mr. Charles Willing, of Messrs. Furness, Evans, & Co., and Messrs. Evans & Warner, and are instances of simple, well-thought-out design.

A third article on "Some Early Dutch Houses in New Jersey" is written by Mr. John T. Boyd, and illustrated by some of the refined and interesting detail we associate with the Old Colonial style, and an article follows describing the New Virginia Military Institute, which for some unknown reason is designed in the Gothic manner.

An article by Mr. Rawson W. Haddon describes some "Modern American School Houses," the plans of which are interesting, though the architectural treatment is of a painstaking Revivalist type devoid of any interest or character.

GENERAL NEWS.

University of London: Extension Lectures at the Museums.

Mr. S. C. Kaines Smith will give a course of lectures at the British Museum on Greek religion, starting on Tuesday, September 22. These lectures will carry on the line of study suggested by the course on Greek art and national life given at the Museum last winter. Modern art and national life will be the subject of his course on Thursdays at the Victoria and Albert Museum, which will deal with the development of art from the Renaissance to the present day, showing how the widely varying treatment of classical models and the application of classical principles in art in different countries is directly due to national temperament, conditions, and history. Particulars may be obtained from the Hon. Secretary, Miss Claire Gaudet, 120, Cheyne-walk, Chelsea.

Bordeaux.

Reverting to our leading article last week on Bordeaux, we are reminded that Mr. Inigo Triggs, A.R.I.B.A., in his work on "Town Pl nnin,' quotes an old document in connection with the mediæval history of the city. It appears that in 1298 Edward I. wrote from Bordeaux to London desiring the authorities to send him four persons "competent to lay out towns—the most able and clever, and those who best know how to divide, order, and arrange a new town in the manner that will be most beneficial to us and to the merchants."

A Deceased Architect's Estate.

The late Mr. George Edward Bond, of St. Ronans, Rochester, architect and surveyor, who died on May 20 last, has left estate to the gross value of £17,327.

THE LONDON ASSOCIATION OF MASTER DECORATORS.

A MEETING of the Council of this Association was held at the Holborn Restaurant on Monday, September 14, Mr. C. E. Wilkinson, President, occupying the chair.

The first subject on the agenda was the consideration of suggestions as to dealing with the abnormal unemployment caused by the war. It was explained that a circular had been issued to all the members of the Association and that a large number of replies had been received. The President said that the suggestions epitomised were in favour of a reduction of hours, thereby spreading the work over a larger area of labour. There were also suggestions received as to compiling circulars to be sent to public bodies and the members' own clients. A further suggestion was that the Association should, as a body, endeavour to get some of the relief work from the Government, and that the profits should be pooled. Dealing with the question of labour, it was the opinion of the Council that the men with dependents should where possible, only be employed and the daily time of working reduced.

At this point the Executive Committee of the Amalgamated Society of House Painters under the leadership of Mr. Bancroft, and who had been invited by the Association to attend and discuss the situation, was introduced to the Council. A very friendly and interesting discussion then ensued, resulting in the following mutual agreement so far as hours on jobs are concerned:—

"That, having regard to the abnormal conditions of works restricted in consequence of the war, that it shall be optional for any firm to reduce the working hours to a minimum of forty weekly as found advisable. This arrangement to be considered a temporary measure and to last during the conditions referred to."

It was also suggested on behalf of the operatives that objection would not be taken to working two gangs, where practicable, each half a week, with the object of giving employment to the larger number.

With mutual thanks for the assistance rendered the deputation withdrew.

The subject of approaching public bodies and urging them to give out contracts for painting was then resumed, when, after a full discussion, the following resolution, proposed by Mr. Anderson and seconded by Mr. F. de Jong, was unanimously agreed to be sent to the following public bodies, viz., the Ecclesiastical Commissioners, City Corporations, Office of Works, the leading railway companies, Board of Trade, the Metropolitan Asylum Board, the London County Council, and other public bodies to the following effect:—

"This Association suggests that having regard to the abnormal amount of unemployment caused by the war, that any work which can reasonably be put in hand forthwith should be done to enable various firms to employ as many men as possible, and further that only those firms who pay the recognised rate of wages should be asked to tender for any work to be done."

A lengthy discussion was then held on the best method of combating the increase of prices of material owing to the war.

Mr. Andrews complained that the very short notice given as to advance was a very serious matter to contractors. Sudden rises when contracts were running might turn an anticipated profit into a loss, and having regard to the nature of our general work, it was undoubtedly having a restrictive effect in placing orders. There appeared to be no justification for firms carrying large stocks to advance prices at twenty-four hours' notice, thereby causing losses to their customers on running contracts. It appeared in many cases to be taking advantage of an unfortunate situation. This opinion was generally endorsed when the following resolution was then proposed by Mr. Andrews, seconded by Mr. White and carried unanimously.

"That the Secretary of the Association write to the kindred Employers' Associations, asking them to take up the question of advance in the price of materials and to suggest that common action be taken in approaching such Associations to agree that notice of three months should be given before any advance in the price of materials takes place."

It was also considered sound advice to buy necessary requirements only.

Communications were then read from various Borough Councils and other public bodies in reply to a communication which had been sent to them. They were almost unanimous in agreeing that the regulation rate of wages was paid by all contractors for their painting work, and had clauses in their contracts to that effect.

The next business was the election of members for the General Council of the National Association of Master House Painters and Decorators, and the following gentlemen were elected:—Messrs. Wilkinson, Anderson, Dakin, De Jong, Andrews, Roberson, Honeychurch, and Rhind.

A letter from Mr. F. Dakin was read, in which he called attention to a protecting clause in contracts which had been adopted by several contemporary associations for their protection. He recommended that this Association also adopt, and which, after discussion, was agreed.

The recommendation was as follows:—

"Our tender is based upon the normal rates of wages and material prevailing at this date, and any advance in the cost of labour and material to be added to the amount of contract upon satisfactory proof being given of such increase. Any difficulty or delay in obtaining labour or material to be the subject of a reasonable extension of time."

Mr. White in supporting the suggestion, gave an instance of a case in which he had tendered and in which it was insisted that each room in a large building should be itemised separately. He afterwards was informed that his tender was accepted for a portion of the work only, and that the other part was given to another contractor. Although he declined to proceed he was threatened with legal proceedings and had to complete the work on the rooms chosen and which were the least profitable items. He mentioned the case as a warning to the members should they be similarly placed.

The proceedings ended with a vote of thanks to the President.

PUBLIC WORKS AND CONTRACTS.

AT the meeting of the Institution of Municipal and County Engineers at Cleethorpes on Saturday, September 19, two important questions were raised by Mr. J. I. Alford, M.Inst.C.E., of Westminster, with reference to the construction of public works. The first was with reference to the different practice as to periods for loans for public works carried out under powers granted by Parliamentary Committees and the Local Government Board, and the second had reference to the hampering effect of the restriction contained in the Public Health Act of 1875 as to the purchase of machinery by public tender. Mr. J. S. Pickering, M.Inst.C.E., Borough Engineer of Cheltenham, President of the Institution, was in the chair.

Mr. J. I. Alford, in a paper on the "Cleethorpes New Sewerage Scheme,' said he desired to make two observations, arising out of the consideration of the design and execution of works of this character, which, however, have no special application to Cleethorpes.

"(1) There is no need of co-ordination between the practice of the Committees of Parliament and the Local Government Board in respect to loan periods for constructional works. Parliamentary Committees, in deciding on the term for repayement, do not always take detailed evidence of the durability of the works to be constructed. The Board make a detailed investigation. The results are often widely different in the two cases. For instance, in a recent case, a local authority, having obtained by an Act a very long repayment period, proceeded to construct a substantial portion of the works by methods which, if under the purview of the Local Government Board, would have resulted in a ten years' period being fixed.

(2) In carrying out works by direct labour, the unsatisfactory nature of the restriction contained in sect. 174 (4) of the Public Health Act, 1875, is brought forcibly into prominence. Every important unit of plant or machinery has to be publicly advertised for, with the result that the engineer generally has to explain why the lowest tender should not be accepted. This has not created any difficulty at Cleethorpes, but it is not so everywhere. Where an open advertisement for plant or machinery is concerned, the author ventures to assert that in nine cases out of ten the lowest tender should not be accepted. In contracts for general construction probably that holds in

half the cases that arise. The system of limited tendering seems to be technically barred by the Public Health Act, although it is in frequent use by many of the larger municipal authorities. An authority, properly advised, ought to be able, on its full technical right and without fear of the auditor, who is to some extent an unknown quantity, to go to a manufacturer of a special appliance and make a contract for supply. Further, it is often forgotten that an engineer cannot in all cases apply a test on delivery or during the necessarily short maintenance period, which will enable him to say whether an appliance is durable. The tests are often impossible or relatively too expensive. If the Local Government Board had statutory power to dispense with sect. 174 (4) they could so exercise their discretion as to prevent the abuses at which the subsection is presumably aimed. Most public authorities include a proportion of members who, under all circumstances, want to accept the lowest tender, and who are apt to regard any advice given to them to the contrary as being in some way interested. No doubt the process of driving a coach and four through an Act of Parliament has points in its favour as a practical expedient, but engineers, trained to apply the laws of nature to everyday affairs, are predisposed to methods of law and order."

Mr. H. Gilbert Whyatt, Great Grimsby, said this matter of the acceptance of tenders was one in which they all suffered. In Grimsby they had suffered, time after time, from the withdrawal of contractors on finding how far they were below the next lowest tender. The St. Helen's Council had recently adopted a resolution that tenders were to be opened in private, and the figures were not to be disclosed until the lowest tenderer had signed his contract. Something ought to be done in the matter, and Mr. Alford rightly called attention to the fact that the acceptance of the lowest tender raised many difficulties.

Mr. A. E. Collins, Norwich, said he did not think Mr. Whyatt had grasped Mr. Alford's meaning as to the matter of tendering. It was a very awkward position to be put in to be obliged to accept the lowest tender, and that, he understood, was Mr. Alford's complaint.

The President (Mr. Pickering) said they all agreed in what Mr. Alford had said as to the divergence in the periods granted for loans between Parliamentary Committees of the House of Commons and the Local Government Board. It was advisable that there should be some co-ordination between them; and, whether the local authorities went to Parliament or to the Local Government Board, the same time should be allowed for the repayment of the loan. They also agreed as to the undesirability of always accepting the lowest tender, and he would go further and say the undesirability of having to advertise for tenders for certain work, particularly for pumping machinery. Unfortunately, there was not that power locally, but he thought, in the great majority of cases, local authorities carried it out in practice, disregarding the Act, and depending upon the good sense of the auditor to approve their action.

BRITISH *v.* GERMAN AND AUSTRIAN TRADE.

In connection with the campaign which the Board of Trade have organised for assisting British manufacturers and traders to take advantage of the opportunity afforded by the war for securing trade formerly in the hands of German and Austrian or Hungarian rivals, it is notified that the following information has been received from the office of his Majesty's Trade Commissioner in South Africa in a communication dated August 17:—

"The readiness on the part of the banks to meet the difficulties of existing conditions is equally shared by responsible merchants. The moral effect resulting from the steps taken by the Imperial Government to keep the African Ocean route free and to remove financial difficulties has been to restore confidence in South Africa to a wonderful degree.

It would appear that, in some respects, South Africa has had to rely on German and Austria for certain lines of commerce which are difficult to obtain elsewhere. Nevertheless, the country has awakened to the fact that something more than financial support to British industry is lost by dealing with foreign manufacturers, especially when its needs can, to a considerable extent, be satisfactorily supplied from one part or other of the Empire. The opportunity will shortly be given to British manufacturers of capturing an immense portion of the trade in this market hitherto held by Germany and Austria, but it is highly necessary that they should not mark the disappearance of these competitors by relaxing past efforts to reframe their trade organisation upon the most modern standards."

His Majesty's Consul-General at Algiers has forwarded (August 26) a statement showing the value of goods largely imported into Algeria in 1912 from Germany and Austria-Hungary to the exclusion of British products. Included in the statement are the following:—Tools and metal goods, pottery, glass, etc., furniture and wooden goods.

This statement does not include goods such as machinery, which are imported in larger quantities from the United Kingdom than from the German Empire and Austria-Hungary, or raw materials, such as timber, etc. The statement in question may be inspected by United Kingdom manufacturers at the Commercial Intelligence Branch of the Board of Trade, 73, Basinghall-street, London, E.C.

His Majesty's Consul at Seville has furnished (August 28) a list of goods which are usually imported into Spain from Germany, including machinery, rails, iron pipes, steel cables, tools, brass ware, brass sheets, gas pipes, tin plates, electrical fittings, cement, lubricating oil, colours, paint, and varnish, glue.

His Majesty's Consul at Oporto cables (September 11) that amongst the most important classes of German goods imported into Portugal are paints, cement, iron, locomotives and plant, electrical machinery, etc.

His Majesty's Consul at Lisbon states in a telegraphic report, dated September 12, that since the beginning of the war he has received inquiries from Portuguese firms for information as to British firms supplying electric fans. Amongst the goods which have hitherto been supplied entirely or partially by Germany are enamelled iron baths, sanitary fittings, name plates, railway carriages, locomotives and component parts, aluminium ware, telephones, shades and globes for gas lamps, glassware. For lathes and drilling machines, and electric lighting plant and fittings, it is considered that there will be a market in the future, but owing chiefly to the fact that there are large stocks of these articles on hand no purchases are being made at present.

His Majesty's Consul at Milan reports:—

"Since the outbreak of the war I have received inquiries from Italian firms who have hitherto received the following classes of goods from Germany, but are now anxious to buy or import British products, viz.:—Rolled and hammered iron and steel bars; rolled wire rods, rolled tool and file steel; cold rolled iron and steel for saws, etc.; hot and cold rolled iron and steel strips; tubes of steel, iron, brass, lead, etc.; metals, ironmongery, tinplate, sheet iron, brass, copper, etc.; zinc, nickel, etc.; electrical material, including telephone; steel wire; pressed steel parts for automobiles, soft steel sheets for laminated cores, electric machinery, steatite insulators for sparking plugs, iron, carbons for electric arc lamps, workmen's tools, hardware articles, enamelled wares, tracing and drawing papers, building material."

His Majesty's Consul at Brest reports (September 7), as the result of inquiries which he has instituted in his district, with a view to obtaining information likely to be of use to British firms desirous of extending their trade at the expense of their German rivals, that in most cases the relatively high prices of British goods militate against their ready sale in Brest and district. British goods, though of high quality, are beyond the spending capacity of purchasers, who prefer, and, indeed, are often financially compelled, to buy twice and cheap rather than once and dear. Surprise is expressed that British manufacturers, while maintaining their reputation for high quality goods, do not also make a bid for the custom of those to whom high quality combined with high price does not appeal. Complaint is also made that catalogues and price lists are usually in English and deal in English coinage, weights, and measurements, whereas German firms quote simplified and inclusive rates in French money, combined with metric figures of weight and size.

His Majesty's Consul adds that opportunities offer for the sale of the following classes of goods of British manufacture, viz.:—Metalware, linoleum, paints, enamels, and varnishes.

His Majesty's Consul further states that there is a French firm at Brest, whose name and address can be obtained on application to the Commercial Intelligence Branch of the Board of Trade, 73, Basinghall-street, E.C., which has a practical monopoly of the sale of all metal goods, is a centre of distribution for all Finistère, and does a very large business in all kinds of metal-ware, stoves, zinc goods, wire, tools of all kinds, nails, screws of all descriptions, tin goods, aluminium goods, paints, enamels, linoleum, etc., a very large proportion of which has, up to now, come from Germany and Austria. The manager of this firm has expressed a desire to receive from England price lists and catalogues which he can readily understand.

Stress is laid on the importance of quoting to Brest merchants strictly inclusive prices, so that customers may know the exact cost of goods delivered at their warehouses; strict attention to this point on the part of German firms has in a large measure contributed to their success in Brest and district. Lists of names and addresses of German and Austrian firms and of representatives of German firms in Paris with whom Brest merchants have done business may be seen at the Commercial Intelligence Branch, as above.

In a communication dated August 25 his Majesty's Consul-General at Rio de Janeiro reports that it is obvious that the present condition of affairs affords British firms an excellent opportunity of securing much of the business hitherto handled by German houses in that city. The numerous German import firms there are absolutely debarred from receiving goods of any kind from Germany, and they can only rely upon such stocks as they happen to have on hand. They are quite unable to execute any orders for German goods. Under these circumstances it is clear that British firms have now an exceptionally good opportunity to secure for themselves those orders which, under normal conditions, would have gone to Germany, and, once having secured such trade, they certainly ought to be able to retain it.

Amongst the principal articles of German import in Rio de Janeiro have been:—Iron and steel for constructional purposes, cement, locomotives and machinery of various kinds, including agricultural implements; gas-engines, electrical plant, and fittings of every description.

Furthermore, it is to be noted that certain German firms in Rio de Janeiro have been doing big and lucrative business in connection with hydro-electrical installations. Indeed, there is hardly any branch of trade with which German firms are not largely connected.

His Majesty's Consul-General emphasises the futility of attempting to build up a lucrative trade by means of correspondence only. It is the personal factor that counts in Brazil, and British firms desiring to capture trade hitherto handled by German firms must make up their minds to send out alert and competent travellers possessed of a good knowledge of Portuguese and of the requisite technical knowledge to enable them to deal promptly and authoritatively with their respective lines of business. These representatives should study the local conditions and requirements, and they should make it their business to satisfy such conditions and requirements.

As regards the likelihood of British firms being able to secure regular payments from local firms, with whom they might elect to do business, his Majesty's Consul-General states that this is a matter calling for the exercise of much judgment in the selection of the firms to be dealt with. Many firms are in a very precarious condition at the present time. Much of the success achieved by German firms has been due to the long term of credit allowed to local firms; and British firms desirous of securing German trade must be prepared to allow local firms a like measure of consideration.

His Majesty's Consul at St. Paul de Loanda cables (September 18) that amongst the goods of German manufacture which have hitherto been imported into Angola, but which might now be replaced by British products, are the following:—Locomotives, railway material, enamelled ironware, telegraph material.

In a lesser degree there are also openings for British galvanised-iron sheets, lubricating oil, and furniture.

THE RING, BLACKFRIARS.

Extensive alterations have just been completed at the Ring, Blackfriars-road, S.E., one of the centres of boxing in London. New seating has been installed, and better accommodation generally. The architect is Mr. W. Hancock, Lower James-street, Golden-square, W., and the general contractors are Messrs. L. & W. Whitehead, Ltd., Portland Works, Clapham-road, S.W.

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ILLUSTRATIONS.

Reims Cathedral.

WE give a view of what has always been considered the finest mediæval monument in Western Europe. Until further details come to hand it is impossible to tell if any substantial portion of the cathedral remains uninjured. In any case, so much is destroyed that its restoration would pro ably be both difficult and the result disappointing. It may be fitting to quote from J. R. Lowell's fine poem entitled "The Cathedral," as it gives expression to the thoughts roused by the great marvels of mediæval art:—

"I stood before the triple northern port,
Where dedicated shapes of saints and kings,
Stern faces bleared with immemorial watch,
Looked down benignly grave and seemed to say,
Ye come and go incessant; we remain
Safe in the hallowed quiets of the past;
Be reverent, ye who flit and are forgot,
Of faith so nobly realised as this.
. . . . . .
The Grecian gluts me with its perfectness,
Unanswerable as Euclid, self-contained,
The one thing finished in this hasty world,
For ever finished, though the barbarous pit,
Fanatical on hearsay, stamp and shout
As if a miracle could be encored.
But ah, this other, this that never ends,
Still climbing, luring fancy still to climb,
As full of morals half-divined as life,
Graceful, grotesque, with ever-new surprise
Of hazardous caprices sure to please,
Heavy as nightmare, airy-light as fern,
Imagination's very self in stone!"

New Government Buildings, Delhi.

WE illustrate the fine designs for Government Buildings, to which we have already referred in our article on the architecture at the R.A.

The work is by Mr. E. L. Lutyens, A.R.A., and Mr. Herbert Baker, F.R.I.B.A.

City of Exeter: Proposed Improvements.

WE give a view of Messrs. Mawson & Son's scheme for Exeter, from a drawing in this year's R.A. Exhibition.

Views of Louvain, Malines, and Dinant.

WE give four reproductions of very interesting water-colours which have been kindly lent us by Sir Ernest George, A.R.A., which have an additional interest to our readers at the present time.

CORRESPONDENCE.

Increase in the Cost of Timber.

SIR,—To those of us who are anxious to keep trade going during the present crisis it is very galling to find that there are those at work in this country who, by raising prices to an unreasonable level, are making it very difficult for work to be carried on. Obviously the less work there is to do the more distress there will be, and one would have thought that patriotism would have encouraged people to do all they could to provide work rather than relief. The greatest trouble we have to face in the building trade is the excessive cost of timber at the present time. I am informed in various directions that there is sufficient timber in this country to last us for twelve months. If this be so, on what grounds do the timber importers justify the present prices of timber? Government has stepped in to regulate the price of foodstuffs. Is it too much to hope that they will step in and regulate the price of timber?

GEORGE H. WIDDOWS.

The Supply of Timber and the Price of It.

SIR,—In your report of Mr. Runciman's reply as to complaints of increase in price of timber, we note that "the interruption of trade with the Baltic had very seriously affected the supply of timber to this country, and while the condition of affairs continued it was not possible to avoid an increase in prices of most descriptions of timber."

Architects and builders, however, will be very pleased to know that the Swedish Foreign Office informed the Swedish shipowners on the 21st ult. that, according to advices now received from the Swedish Minister in Berlin, Germany had been pleased to declare deals, battens, boards, staves, and packing-case boards to be non-contraband of war.

This attitude of Germany is quite understandable, because she is extremely desirous of keeping friendly with Sweden. The result has been that many new charters have been fixed up, and ship-brokers are again trying to obtain offers. Owners are willing to risk their boats in the Baltic, the risk, of course, being from floating mines. Seven or eight boats during last week have been chartered, and altogether trade is making great efforts to get going again.

I ought to have said that the timber must be carried in neutral bottoms (*i.e.*, in neutral ships), but there is no difficulty in that.

It is still impossible to take timber from Finland, because she is Russian, so that, as some of our best joiners' deals come from Finland, the better-class timbers will still be high in price, especially as there is difficulty in loading from the White Sea, on account of the shortage of labour, the conscripts having been called into active service.

At the commencement of the war Russia prohibited the exportation of timber; but she removed this prohibition very soon after it was made. The difficulty is now with the loading.

A friend of mine sent a boat out at the commencement of the war, but it was returned empty because of the prohibition. He had twelve thousand pounds' worth of Archangel deals and boards on order which would have been very profitable to him during the coming winter; but he told me that he had since cancelled the order because of the difficulties of loading. If it could not be loaded before the White Sea was frozen (and the White Sea ports close earlier than any other timber exporting ports), he was afraid that they might take fire before they could be loaded per "first open water" in the spring. They have very frequent fires in Archangel, on account of the tremendous quantities of timber stocked there, and the difficulty would be for him to prove that it was not his timber that got on fire. It is a very difficult thing to prove after a fire that it is or is not your timber that has been burnt, because there are thousands of other stocks of exactly the same size all piled together.

It seems to me that the position is that we shall be able to take no Finnish and very little Archangel timber, while, if timber goes very much higher during the war, American spruce and cheap pitch-pine will have to take the place of deal. The bright gleam of sunshine is the exportation of Swedish timber.

J. H. KERNER-GREENWOOD.

P.S.—Since writing the above I have received information from a very reliable source stating that Finland has shipped about two-thirds of her normal output, so that the total reduction on shipments from Finnish and Swedish ports will not be a very important matter, in view of the fact that the consumption on this side during the war will also be very much less than usual.

Moratorium and Rents.

SIR,—There appears to be confusion in the minds of many people with regard to the moratorium, the Courts (Emergency Powers) Act, etc., and their effect upon rents and rates.

The Land Union is in communication with the Treasury on the subject, and I shall be only too pleased to help those interested who are in doubt or difficulty if they will communicate with me here.

C. H. KENDERDINE
(Secretary the Land Union).

Architects and the War.

SIR,—Although it may be presumed that most of the architects who have had to leave their work in order to join the armed forces were able, before their departure, to place their work in the hands of colleagues and friends, yet it is thought probable that cases may arise in which it will be difficult for architects to find suitable substitutes. In such cases architects are invited to note that the Architects' War Committee, already formed, is willing to give advice and help. The extent and nature of the help offered may be classified as follows:—

(*a*) Undertaking complete charge of an office.

(*b*) Carrying on in all its phases a specific piece of work.

(*c*) Visiting a specific piece of work and reporting to office only.

(*d*) Dealing with clients, builders, and general matters.

(*e*) Providing draughtsmanship directly or indirectly.

(*f*) Giving only general advice on and when required.

Readers in sympathy with the Committee's efforts can help in one or more of the following ways:—

1. By writing to the hon. secretary, Architects' War Committee, 9, Conduit-street, Hanover-square, London, offering their services, when a form will be sent to them inviting specific information as to the extent and nature of their generosity should this be called upon.

2. By sending this announcement to colleagues who have already joined the Forces, and who are known or supposed to require assistance.

3. By intimating their own intention of joining the Forces and the general nature of the professional circumstances which will result when another form will be sent with full details.

4. By drawing the attention of others likely to be interested in this movement, whether prospective donors of services or military patriots.

The War Committee desire to emphasise that their offer of help is extended to all architects, whether or no they be members of any organised architectural body.

The Committee also wish to call the attention of those desirous of joining the Army to the fact that certain advantages may be obtained by recruits by joining through the Architectural Association rather than through other channels.

C. STANLEY PEACH,
Hon. Secretary, Architects' War Committee.

FIFTY YEARS AGO.

Proposed Town Hall for Manchester.

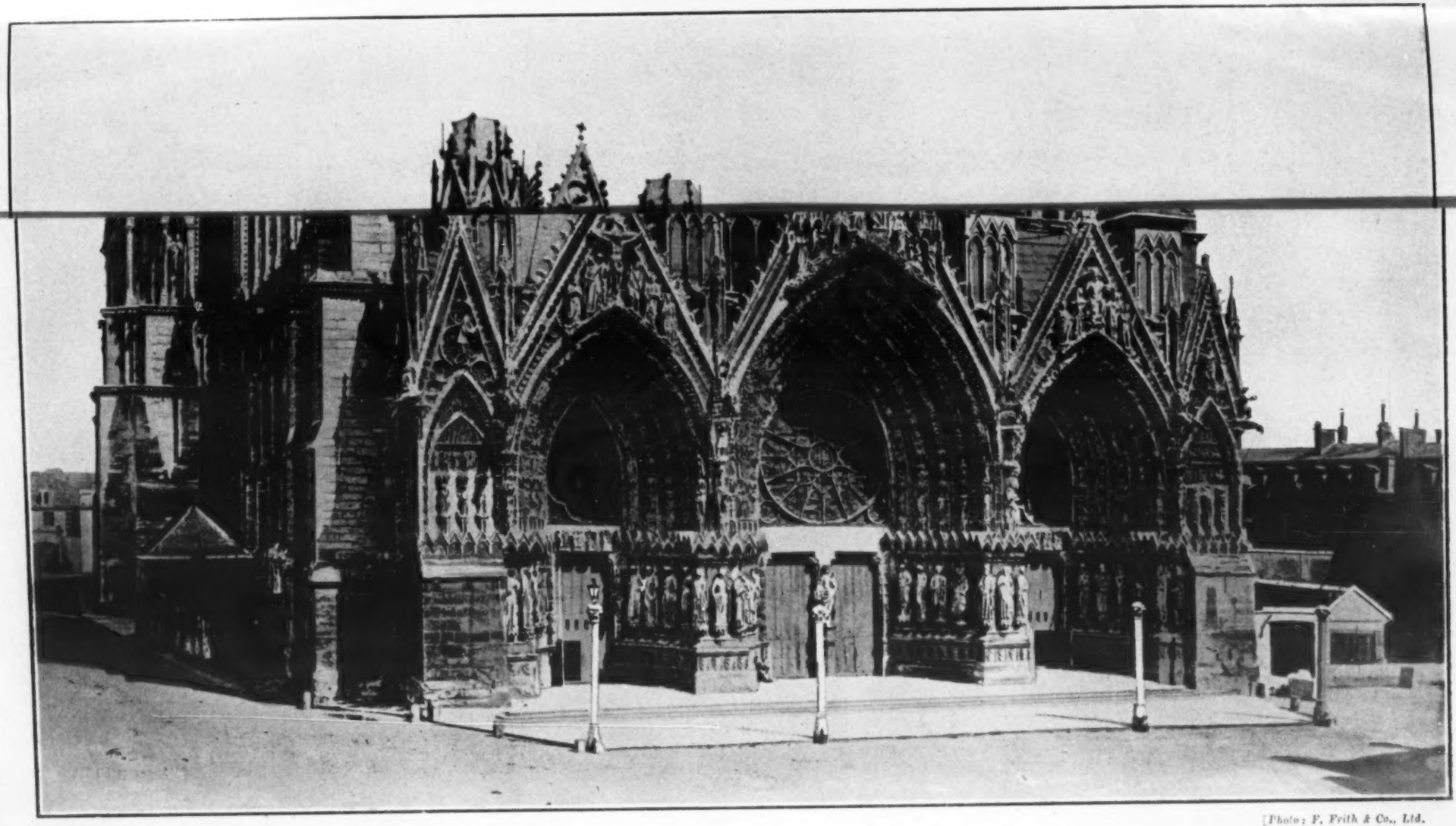
OUR readers have been informed that the Council of that city have determined to build a new Town Hall. Six sites have been looked at, and the General Purposes Committee have agreed to recommend to the Council the adoption of the site known as the Town Yard site. The merit of this site is that a large portion of the land belongs to the Corporation; but it is very far inferior architecturally, and, as some think, in convenience, present and prospective, to the Piccadilly site. The Piccadilly site is exactly opposite to the Infirmary front; and, as the probability increases of the Exchange being removed to the site of the present Infirmary, it is more incumbent upon the Corporation to consider well the locality.

[*** We give the above extract from the *Builder* of September 24, 1864.]

MALINES CATHEDRAL AND CHURCH OF ST. JEAN.

The bombardment of Malines on September 2 laid the cathedral church partly in ruins, riddling the nave and the belfry and spire with shells, and destroyed the beautifully-painted modern windows, together with the fine gateway of the cathedral and the famous peal of bells in the St. Rombold tower. The cathedral, dedicated to St. Rombaud, was originally built upon a cruciform plan, in the closing years of the thirteenth century; it was restored during the two next following centuries, and again, upon an extensive scale, about fourteen years ago. The tower, begun in 1452 and left uncompleted, was designed to have been the highest in Europe. Rubens' pictures in the church of St. Jean, one of them being an altarpiece in the form of a triptych, were fortunately rescued in time by their removal to Antwerp, and the paintings in the cathedral, including the famous Van Dyck altarpiece, are, we learn, in safety.

THE BUILDER, SEPTEMBER 25, 1914.



[Photo: F. Frith & Co., Ltd.

REIMS CATHEDRAL: WEST FRONT.

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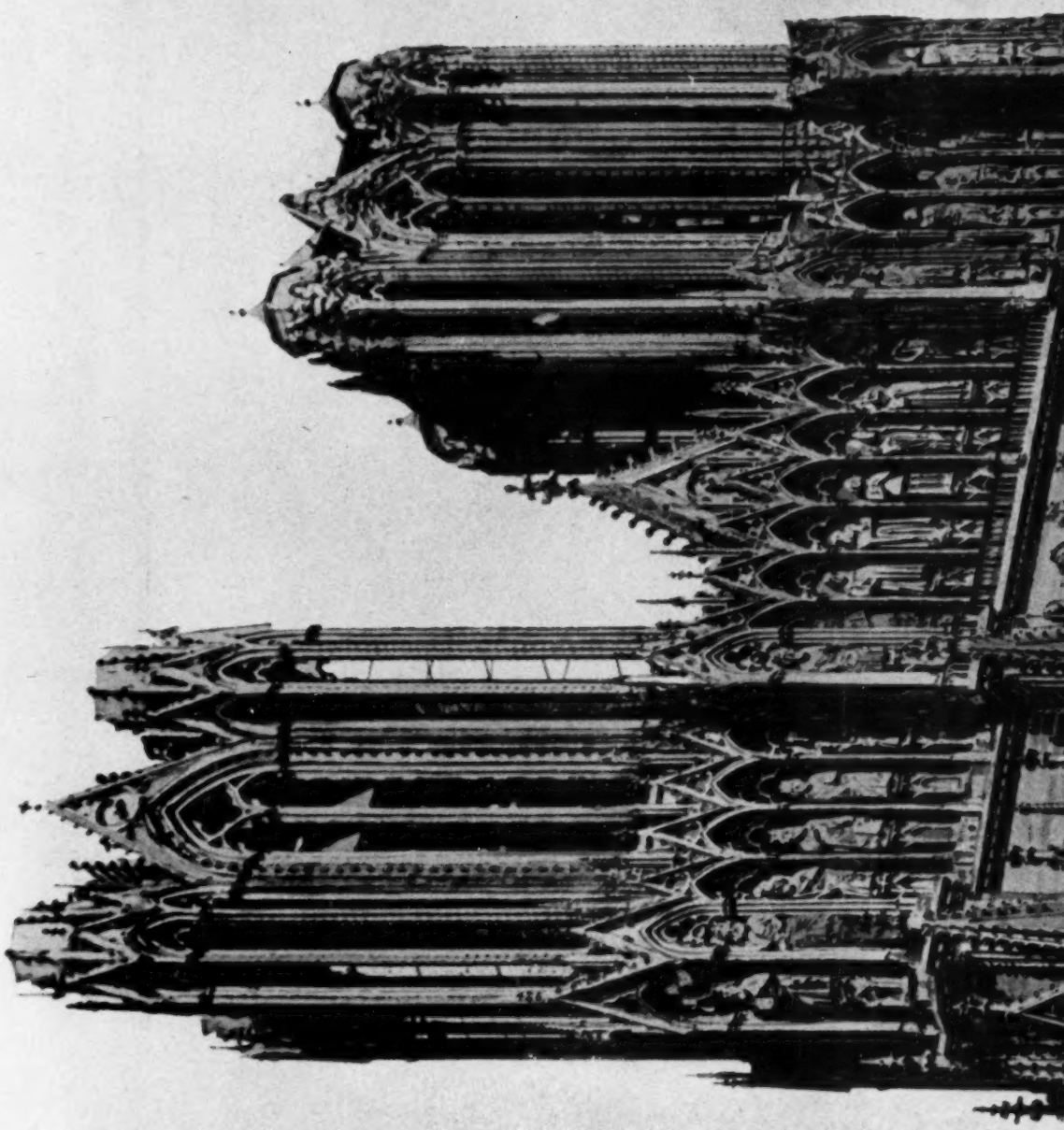
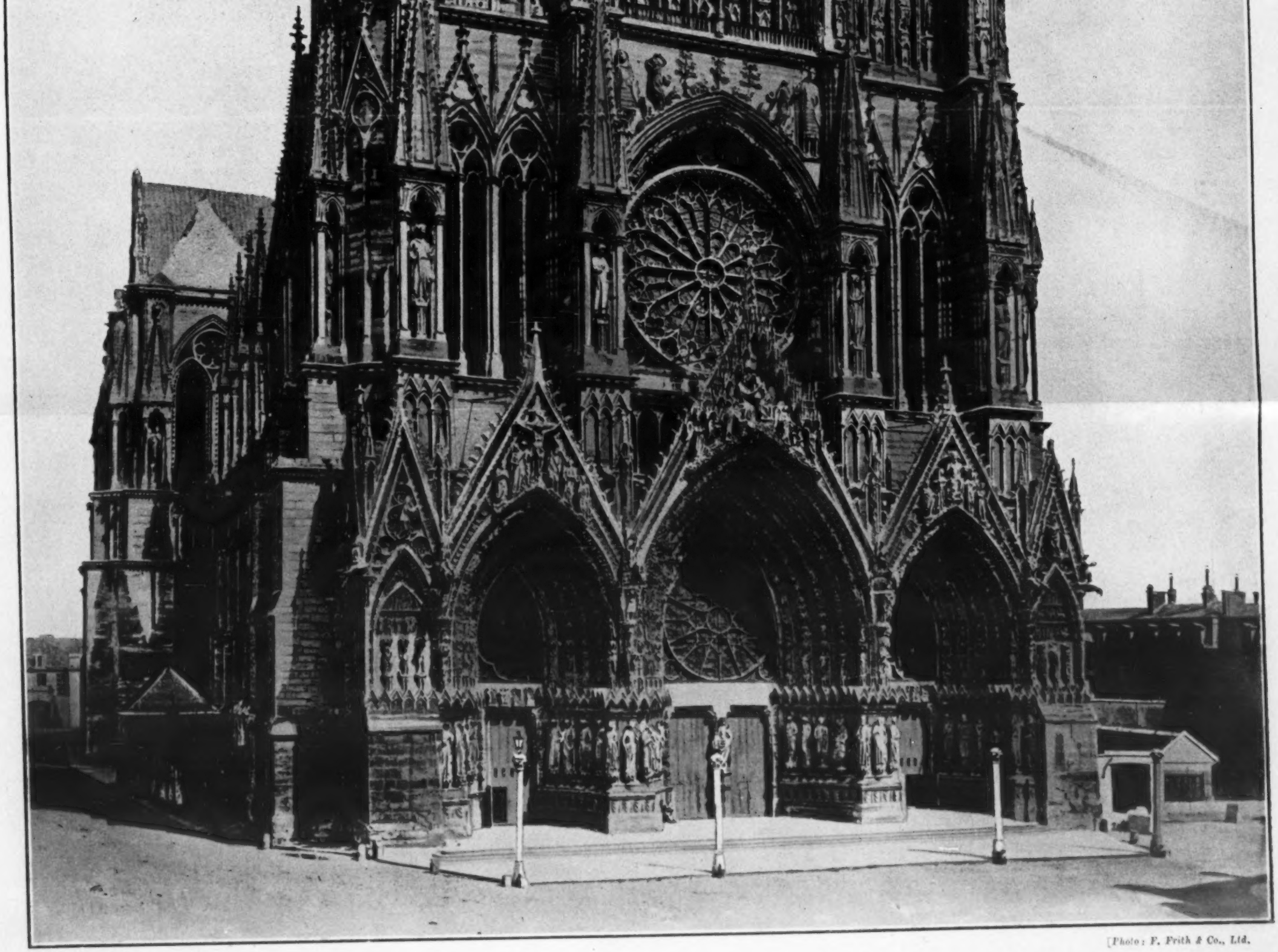
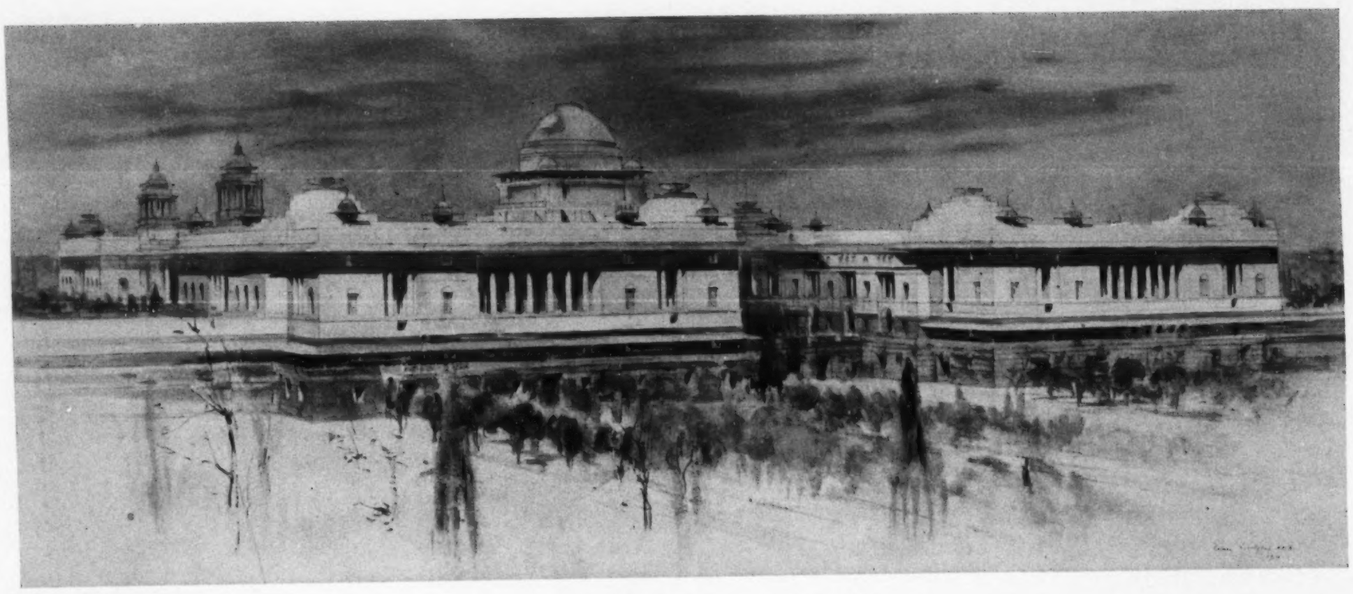




[Photo: F. Frith & Co., Ltd.

REIMS CATHEDRAL: WEST FRONT.

GOVERNMENT HOUSE, DELHI: AS SEEN BETWEEN THE SECRETARIATS.



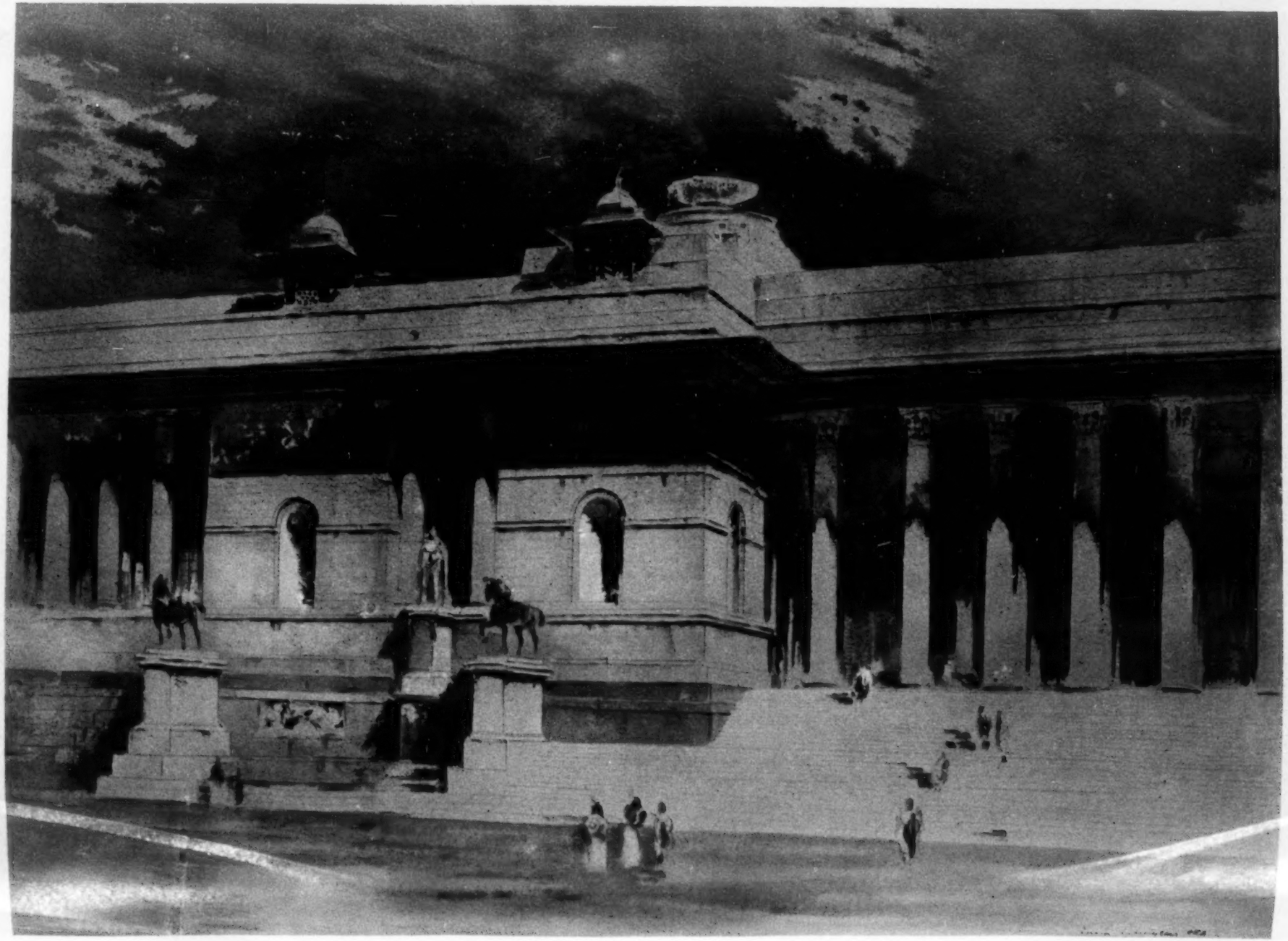
GOVERNMENT HOUSE, DELHI: FROM THE SOUTH.

GOVERNMENT HOUSE, DELHI: THE MAIN FRONT.—Mr. E. L. Lutyens, A.R.A., F.R.I.B.A., Architect.

SECRETARIAT, DELHI: FRONT LOOKING WEST.

SECRETARIAT, DELHI: SIDE VIEW FROM LOWER LEVEL.

SECRETARIAT, DELHI: INSIDE FROM THE GREAT PLATFORM LEVEL.—Mr. Herbert Baker, F.R.I.B.A., Architect.



GOVERNMENT HOUSE, DELHI: THE PORTICO.—Mr. E. L. Lutyens, A.R.A., F.R.I.B.A., Architect.

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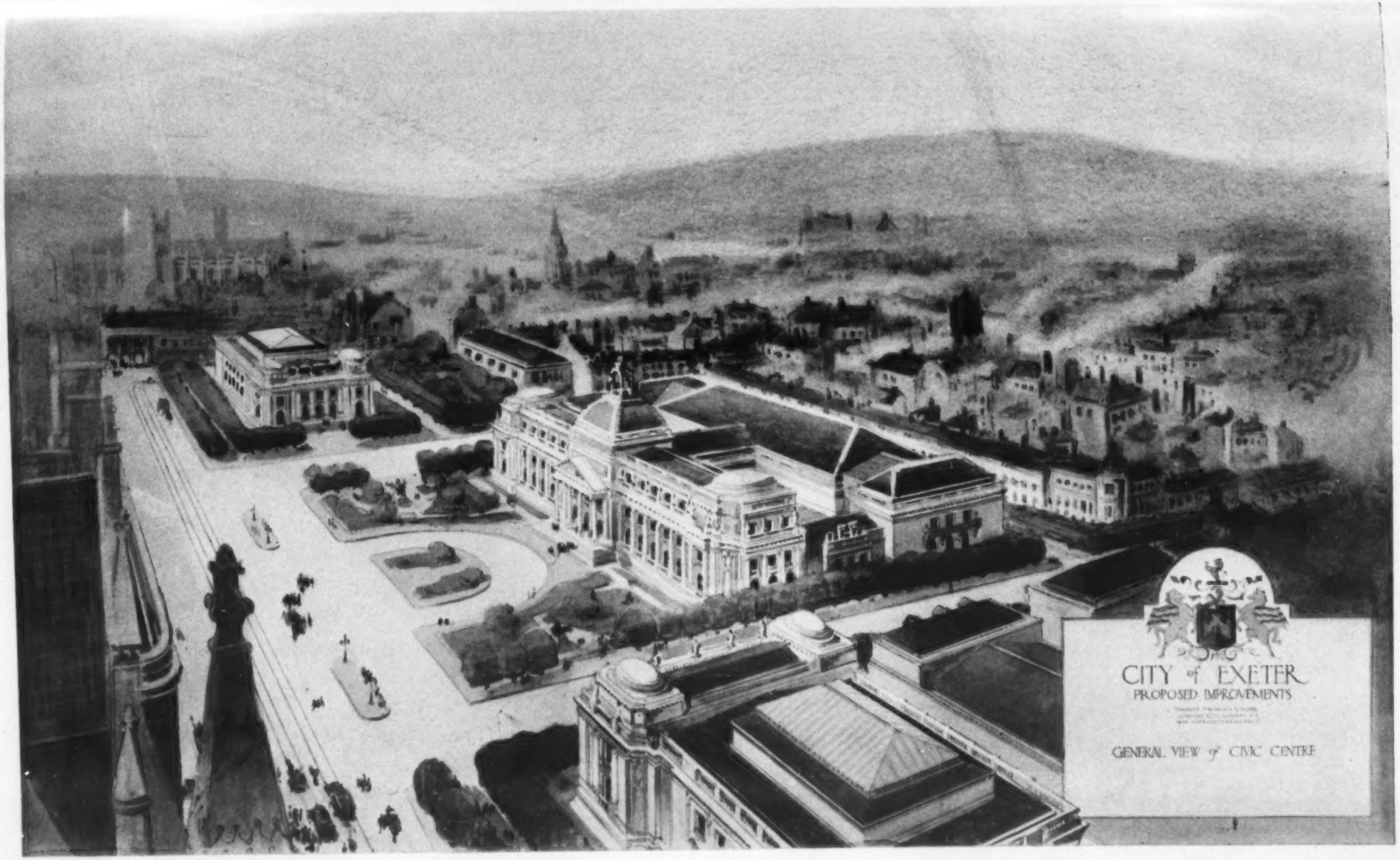

PROPOSED IMPROVEMENTS, EXETER.—By Messrs. Thomas H. Mawson & Sons.

LOUVAIN.—From a Water-Colour Drawing by Sir Ernest George, A.R.A.

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DINANT.—From a Water-Colour Drawing by Sir Ernest George, A.R.A.

MALINES.—From a Water-Colour Drawing by Sir Ernest George, A.R.A.

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LIGHTING, HEATING, & VENTILATION.

THE great tendency of the present day is to design and equip all buildings, as far as circumstances will permit, to give the maximum amount of convenience and comfort, and the minimum comfort now considered permissible provides a condition which a few years ago would have been looked upon as luxurious. This applies more especially to buildings of medium size and those designed for middle-class occupation, which in the past were seldom seriously considered with regard to lighting, heating, or ventilation, and in large buildings the equipment was limited to simple and often inefficient devices which bestowed very little benefit on the occupants. It is only natural, in the course of evolution, that the science of illumination and heating should become developed and the ideal more nearly approached as the years pass, and with a more complete knowledge of these subjects there must be a marked improvement in the equipment which will tend to greater usage. In the course of time the general adoption of any installation will cause it to be looked upon as a necessity, and its development then usually makes rapid strides. If we consider the telephone, for example, it appears strange to imagine that business could be carried on without it, and to most firms it is considered an absolute necessity, and yet a few years ago it was a luxury and not at all indispensable. The same thing applies more or less to heating systems, these being only occasionally installed in buildings some years ago, and then only in very large public buildings, whereas there are now very few buildings erected in London that cannot boast of a heating apparatus of some kind.

Lighting.

The question of artificial light is a very important one, both from the aspect of the nature of the illuminant and the distribution. Some remarkable developments have taken place on the subject, and this is not surprising when it is realised that every building requires some kind of artificial light, and there is, therefore, a very large field for the exploitation of any new idea or improvement; and also the requirements are so diverse, from the searchlight to the ordinary domestic light, that new problems have to be dealt with, and in consequence new ideas are evolved. There is also always that competitive factor between the various classes of illuminant which necessitates continual improvement by those who are interested in any particular system or method, to prevent it being superseded by another system on account of greater efficiency or economy. The introduction of incandescent burners for gas, as an example, resulted in a great improvement in lighting, while reducing the cost to the consumer, and this has gone a great way to prevent its being entirely superseded by electric light. Then, again, the latter illuminant has become very much more popular recently on account of the introduction of metallic filament lamps, which result in a considerable saving in current. This progression becomes more marked in this age of science than in the past, when we progressed from candles to oil lamps, and from the latter to gas, because there is every convenience for rapid development and more need for putting forward improvements quickly if benefit is to be reaped by the originator. There is no record of the first use of artificial light, and such could hardly be expected, as it would prove a natural evolution from heat, possibly occurring as a torch of wood taken from the fire on the hearth; but even in Homeric times there is evidence of fire in braziers for lighting purposes in addition to torches. It is also clear that lamps and candles were used in very ancient times, the lamps being probably the more ancient of the two, and both developing from the first idea of soaking a porous wick or material in fat and allowing it to burn to obtain artificial light. The earliest lamps were small covered vessels of pottery or metal with a hole for the wick and a separate hole for filling, and the light given by these must, of course, have been very smoky and flickering. Candles have been used until the present time, but their use is confined almost entirely to isolated country districts and for portable lights, and they cannot be considered seriously as an illuminant of the present day. The oil lamp developed as the years passed, and its use was very general a century ago, while it is still used in country districts where gas and electric light are not available, kerosene being the oil generally used in this country, and the wick generally of a circular form. Many oil lamps give quite a good light, and, generally speaking, they are fairly economical, but the possibilities are so limited that their use is on the decline, and in the course of time will be entirely eliminated. Gas lighting has been employed for many years, its general use commencing about a hundred years ago, and until the introduction of electric light, about 1880, it was the chief illuminant for all important buildings and streets. It is, of course, still used extensively, but the introduction of electric light has displaced it from its chief position, which it is hardly likely to regain. The flat-flame burners which were originally used were not economical and did not produce a good light, and the introduction of the incandescent mantle and burner was a tremendous improvement both in efficiency and economy, and it was this introduction which has caused gas for lighting to be retained. The gas above referred to relates to coal gas, and in addition to this there is air gas, which was sometimes used for isolated country houses; but far more important is acetylene gas, which is of much more recent introduction, and which has a fairly extensive use for some purposes at the present time. For use in isolated places this is one of the best and most practical illuminants, as it is cheap, easily made, and gives a light not surpassed in quality by any known artificial illuminant. It is peculiarly well adapted for temporary and portable use, giving, as it does, a very brilliant and steady light, well suited for use with reflectors and projecting apparatus, admirable in colour, and very easy of operation.

Since the introduction of electric light about thirty years ago the illuminant has been steadily growing in favour, and where available it is almost invariably installed in a building. It was at one time considered expensive and dangerous as liable to cause fire in buildings, but the first-mentioned objection has been overcome by the introduction of metallic filament lamps, which allow the light to be produced with the minimum amount of consumption of current, and the second objection, which is due to fires occurring in buildings improperly wired has been overcome by the improvement in the methods which are now adopted by reputable electrical firms. The best firms will not consent to execute second-class work, and it will be found that unless proper screwed tubing is to be used they will not even tender for the work, but prefer to lose the chance of carrying out a scheme which might reflect on their reputation; and this is very creditable, and with such a standard all possibility of danger is eliminated.

Electric light is convenient, perfectly steady, and healthy, and does not cause blackening of ceilings, which is a great advantage. When not used recklessly it will prove to be very economical, and its applicability to all conditions of lighting have assisted considerably in making it popular. The electric arc lamp is the chief commercial source of powerful light, and this was brought to general notice by Davy as early as 1808 in the course of his experiments with the great battery of the Royal Institution. During recent years vapour tube lighting has received a great deal of attention as a possibility for spectacular purposes. A good example of this can be seen on the front of the West End Theatre in Coventry-street. There are now in existence three distinct forms of tubular lighting, viz., the mercury vapour tube, the Moore light, and the Neon tube. The mercury light gives a green tint, the Neon tube a vivid orange-red, and the Moore tube yields a pink or white, the latter approaching closely to daylight, according to whether the tube is filled with nitrogen or carbon dioxide. It must always be remembered that efficient lighting is a matter of extreme importance from many points of view, and the initial outlay entailed by a well-thought-out scheme with a good illuminant is always worth while. The eye is extremely sensitive, and a flickering or poor light is likely to cause injury, as is also a light not skilfully disposed or shaded. A light may be too bright for the eyes, and in this way cause them to be strained, and then a shade may be used with advantage. There are special globes and shades on the market which are designed on scientific lines, and these may often be used with advantage. Each case must be dealt with according to the particular circumstances and occupation, and there is often a tendency to provide illumination which is simply installed to give light and not necessarily the maximum efficiency or comfort.

Heating.

Rapid progress has been made during recent years in connection with the heating of buildings, and these improvements have been very greatly on the lines of producing a more pleasant form of heating than that installed in the past. Many years ago there was a tendency to instal a heating apparatus which, when working, often rendered the rooms stuffy and unbearable, inducing headaches and a feeling of fatigue which was injurious to health and work. This may have been partly due to improper ventilation, but even then the primary cause was a faulty heating arrangement. There are buildings at the present day which are heated by hot air which is absolutely scorched and from which a great deal of oxygen has been extracted, but which is, nevertheless, forced into the rooms in such a manner that the occupant, after a short time, feels almost unable to breathe; and under such conditions as these it is far preferable to do without any heating whatever. Such a condition is not necessary, however, with the many excellent heating engineers and systems available, and should not be tolerated for a single day. A building efficiently and pleasantly heated is comfortable, and the expense entailed in equipping and working the system is fully justified. In very small buildings, such as small houses, etc., of course, it is not necessary to put in a special heating plant, but warmth is provided by means of fires, which are convenient and comfortable. Coal fires are pleasant and provide a sense of comfort which is, perhaps, not provided by any other method; but the heat given off is generally more or less local, and they have the disadvantage of dust and dirt, and the heat is not available immediately upon lighting the fire. For these reasons gas fires have become more popular, and efforts have been made to meet the demands in every way by producing types of gas fires to appeal to all classes of users. The earliest types were usually inartistic and not always healthy, but they have now been perfected, and they can be safely used in bedrooms without the slightest danger to health. They can also be adapted to ordinary grates, and when the asbestos lumps are covered with cokelike material the appearance resembles that of an ordinary coke fire; and thus architects now look upon them with favour, and their use is becoming extensive. There is the great advantage with gas fires that they can be lit when required without any trouble, and are therefore useful when heat is only required intermittently for short periods, and they are perfectly clean.

Larger buildings are usually heated by hot air, hot water, or steam, and in such buildings the heating and the ventilation must necessarily be worked together. In many cases, for example, radiators are provided for heating under windows and such positions, and the fresh air coming into the building in the winter is also warmed; thus the ventilation system also contributes to the warmth of the rooms. Great care must be taken in heating-work to provide the heat

in a healthy, mild form, so that the air is gradually warmed and the temperature is moderate, and not such as to be oppressive. Hot-water heating on the low-pressure system provides an excellent heating method, for these reasons. This has been recognised by many heating engineers, who have devised patent systems for obviating the large pipes which were generally required with the method, and efficient installations can now be put in with mains about one-quarter the size of those required in the past, and these mains can also be run independently of levels. Great efforts have also been made to provide heating in such a form that it does not interfere with the decorative treatment of the rooms, and as an instance of this may be given the hot-panel method. This consists of a series of very small hot-water pipes which are placed on the surface of a wall or floor and finished in the thickness of the covering material, thus presenting a smooth, ordinary surface, which gives no indication of heating apparatus, and yet answers the purpose of providing a pleasant heating medium. This method is very useful in corridors or places where space is limited and projections undesirable, and when floor panels are used they provide an admirable method of catching cold air, which is apt to come in under the door, and prevent cold feet, which often cause discomfort even in rooms which are otherwise well warmed.

Ventilation.

The progress in ventilation has been confined, possibly, more towards the perfection of old methods rather than to the evolution of new systems, and systems which were condemned by many experts years ago are still being used; but the disadvantages have been considered and, to a certain extent, eliminated, and some of these systems, therefore, are capable of doing good work. There are still to be found those persons who adhere to natural ventilation as being the only kind that is of any value, and who look upon all kinds of artificial or forced ventilation as superfluous or useless. The great point of debate in artificial ventilation has always been the comparative merits and demerits of upward or downward ventilation, and when on this subject the debater is treading on dangerous ground. There are many arguments in favour of upward ventilation, but there are also systems which work well on the downward system, and the only conclusion that can be arrived at is that everything depends on the designer of the system and the nature of the building. The arrangement that would be suitable for a theatre, for instance, would not necessarily be suitable for a hospital. A method of ventilation may vary from a simple outlet shaft with a grating and cowl to an elaborate scheme with fresh and foul air shafts, with forced air, balanced and arranged to control the air currents to a fine point. If a ventilation system is installed it must, to be efficient, be capable of doing its work well at all times and not be upset by an open door or window, such as is the case with some schemes, and it must be capable of regulation and adjustment. It must not be forgotten that the breath ascends on leaving the human body, and at the same time the fine particles of organic matter will fall towards the floor. If extracts are only provided at the top of the room any organic particles will not be drawn away, and if the outlets are all placed at the bottom no advantage is taken of the natural tendency of the vitiated air to rise. In a smoking-room, for example, it would be extremely difficult for the smoke to be all drawn out by outlets at the bottom unless a regular draught was caused, and this would be unsatisfactory. In some schemes the fresh air is admitted at an intermediate level, and extracts are provided at both high and low levels, and the system appears a good one for several reasons. The top extraction is useful in the summer for removing the warm air which rises, and the low-level extracts are of value in the winter as taking off the cold air at the bottom of the room, thus compelling the fresh incoming air to be drawn down to the occupants. The ventilation for each apartment must be considered on its merits, as the requisite number of air changes per hour for one room may be insufficient or excessive in another. There should always be a tendency for the most powerful outward pull to be towards any service rooms or kitchens, or, again, towards any lavatories, as this will prevent smells from passing or being drawn into the more important rooms. In large kitchens, boiler-houses, and suchlike there is a great tendency on the part of the occupants to demand too much extraction, and they are not satisfied unless they can feel an actual draught and all perspiration is done away with. This condition will, however, cause them to feel a greater sense of heat, as when the body is dry and not slightly in a state of perspiration the radiant heat becomes intolerable, and the body has the sense of feeling that it is being burnt. There are many important points to be considered, and if the system is too economical there is the question of the type of fan to employ, the application of the power, the nature of the ducts, and many parts of the whole system, each of which may be well or ill considered. The system should be economical and efficient, there should be no perceptible draughts, and the air should be kept pure and at a temperature which provides the maximum sense of comfort.

GAS HEATING AS APPLIED TO LARGE BUILDINGS.

Much having been said and written during the past few years on the part that gas heating has played and is playing in private residences, both large and small, it is interesting to consider what is being done as regards the provision and fixing of gas heating appliances in connection with large buildings such as factories, suites of offices, hospitals, theatres, cinemas, etc.

There is very little doubt that until fairly recently gas was not extensively used for heating large buildings, but there is still less doubt that it is now making great and ever-increasing strides in this direction. For the explanation of this state of affairs we must look in several directions.

For one thing, the prejudice against gas heating is rapidly dying away, if indeed it is not entirely non-existent, now that medical men and hospitals are looking on gas heating with favour, but when it is considered that in large buildings the commercial aspect of the situation usually comes very prominently to the front, more so than in private residences, we must look further than this for the reason or reasons for what is undoubtedly taking place. That is to say that, however strongly it might be claimed that gas heating is hygienic, unless it could claim other virtues, such as cheapness, convenience, and saving of labour, it would never appeal to those responsible for the erection and fitting of large buildings, such as those already mentioned. It may be admitted that it has always been possible to claim for gas heating that it is convenient and labour-saving.

Due credit may therefore have been given to it for any financial saving attained by its convenience, owing to its being possible readily to turn it on and off as and when required, instead of leaving it always burning wastefully whether required or not, as is usually the case with coal fires or radiators which are centrally heated from coke boilers.

Credit may have been given to it also in respect of the saving in the cost of labour for lighting and replenishing fires, cleaning grates, flues, etc., and the cost of purchasing and replacing stoking tools and coal-scuttles, but even if (and when) due credit had been given for all possible or probable saving, it was still necessary for gas heating to prove that it was reasonably economical as regards cost of consumption before it could be seriously considered in connection with heating large buildings. As regards the older patterns of gas heating appliances this could seldom be truthfully said.

Owing, however, to the great advance in scientific research that has been the feature of modern gas stove manufacture, this stigma has been removed, because gas fires and gas heating stoves are now constructed to give, and will give, the greatest heating efficiency that is possible to be obtained per cubic foot of gas that is consumed. With gas fires of the radiant or glowing type the major portion of this efficiency is given off in the form of radiant heat, a small portion as convected heat, and the remainder is used, not wasted, in creating a ventilating effect, whilst effectively carrying the products of combustion up the chimney.

Gas steam radiators, too, have been constructed, and are now extensively used, the consumption of which by the use of special thermostatic valves is automatically reduced when their tubes reach a certain heat, viz., that which is necessary to heat suitably the air which comes in contact with and passes from them.

These automatic valves therefore serve two purposes. First, they ensure that during the whole period a radiator is in use the air which comes into contact with it shall not be overheated, because the valves will reduce the gas consumption before this can occur. On the contrary if a sudden or permanent inrush of cold air chills the radiator the gas consumed will automatically increase and the tubes will be again heated to their proper temperature.

Second, these valves ensure that the radiators shall be always economical in consumption of gas.

In addition to this economy in consumption of gas by the newer types of gas fires and heaters, there is the outstanding fact that in all parts of the kingdom during the past few years the price of gas has materially reduced, while, on the other hand, instead of there being a corresponding reduction in the price of coal, the boot is on the other leg, and there has been a material increase in this direction.

Even if, as a result of the war, some gas companies find it necessary slightly to increase the price of gas temporarily, the general cost per thousand cubic feet will still be much below that of a few years ago.

These all-important factors have further reduced the already materially decreasing gap between the actual fuel cost of gas and coal when either is used in the production of constant as compared with intermittent heat. When intermittent heat only is required there is, of course, no question but that gas is cheaper than coal.

Granted, then, that the problem of economising in the cost of gas consumption had been solved, there was yet another difficulty in the way of heating large rooms by the use of radiant gas fires.

It was not possible until recent years to obtain gas fires sufficiently large to warm large rooms and offices, or sufficiently powerful in radiant (or glowing fire) efficiency for the requirements of such rooms as hospital wards, where, while a suitable temperature could be maintained by hot water or steam-heated radiators (when stoking was carried out regularly and everything was working satisfactorily), this was not all that was desired, as such a system of heating did not provide the glowing appearance of the radiant coal or gas fire. This genial appearance might almost be looked upon as part of the medical treatment of patients, owing to its creating a feeling of cheerfulness among them during the dull days of autumn, winter, or spring. The ventilating effect that such open fires set up would also be lacking if hot water or steam-heated radiators only were used. Lack of size and radiant power as regards gas fires is now a thing of the past. It is now possible to obtain radiant gas fires which provide a 21-in. width of glowing fire. These are fitted with duplex taps, which shut off at will the ends of the fires, thus reducing the glowing surface to about 12 in. wide in the centre. Within our knowledge such fires have, in some hospital wards, satisfactorily taken the place of huge coal fires, which were previously kept burning day and night all through the winter, as is usual in such places.

Furthermore, we understand that at the present moment one of the largest gas stove manufacturers are designing a square-shaped gas heater with metal and tiled sides, containing a radiant gas fire front and back; the whole to be one structure, fitted inside with downcast flues, suitable for fixing in place of the four-sided, flat-topped, double fire coal grates, which are at present a feature of many large hospital wards.

These coal grates, facing two ways, are so constructed in order that they shall spread their radiant heat over the largest possible area, while at the same time giving off from their metal sides and tops a certain amount of convected heat, in order to assist in keeping the temperature of the wards at the desired figure. The flat tops can also, to an extent, be used as small hot tables. Being centrally fixed, it is necessary for them to have downcast flues, and the smoke and products of combustion are drawn through ducts under the floors into ordinary brick flues. One of the

above-mentioned newly-designed gas heaters will be fixed immediately it is ready, in place of one of these central double coal grates in a ward at a large London hospital. As a proof of the rapid advance of gas heating in large buildings we may state that more than seventy radiant gas fires are already in use in this particular hospital, and that these were only installed after very careful tests had been made by the management in regard to their efficiency, etc.

In consequence of the many improvements we have enumerated, architects and builders nowadays seldom fail to arrange for gas points to be run in large buildings to all requisite heating positions, in view of the fact that sooner or later these are likely to be required. In some cases they go even further than this, and arrange for the fixing of gas fires.

We have heard of a number of cases which well illustrate the strides that gas heating is making, and as such matters are naturally of interest to our readers we make no excuse for quoting a few of them.

In a large college that is to be rebuilt the architect has made provision for about forty gas fires to be fixed in bedrooms, and the builder will fix these in grates of the "well" or "heaped" fire type. This type of gas fire has been specially designed to be fixed as part of, and not to be stood in front of, such grates.

In a block of offices now in course of erection no coal grates are being provided, but gas grates are being prepared for by the builder, who will tile the recesses, leaving openings ready for the gas fires to be stood against, in order that their products of combustion shall discharge up the chimney. There are now various designs of these gas grates (generally known as "buildin" gas fires) which are constructed to stand flat back to tiled openings.

For elaborately-designed rooms, where decorations, etc., must harmonise, it is possible to obtain gas fires which have been specially designed to suit practically any period of furnishing or architecture, while there are a large number of gas fires that have good plain and neat outlines suitable for general use.

At a large factory, where the ventilation was not good, gas steam radiators have been fitted throughout, with flues leading from them into large common flues suspended from the ceiling, these in their turn discharging into ordinary chimney flues.

At least one large variety theatre in London is heated by gas steam radiators, and at cinemas, where open fires are impossible, and where attendants cannot be provided or spared to attend to coke furnaces for water-heated radiators, gas-heated radiators are especially suitable and are being fitted in large numbers. Many churches, mission halls, and similar buildings are now heated in this manner.

While no doubt some profit is attached to the sale of coal under these circumstances, it must be remembered that labour has to be provided, chimneys have to be swept, and decorations, etc., suffer; moreover, the coal storage cellars occupy a fair amount of space, and such space is valuable here—as in other large towns—when it can be easily let at a rental for some other purpose. It should be remembered that this argument also applies to the space occupied by furnace-rooms when water-heated radiators are in use.

In conclusion, it is worth mentioning that somewhere attached to, or connected with, all large buildings there is usually the ubiquitous motor garage to be found. For the heating of this a safety gas radiator has been devised, the construction of which has been based on the well-known principle of the miners' safety lamp.

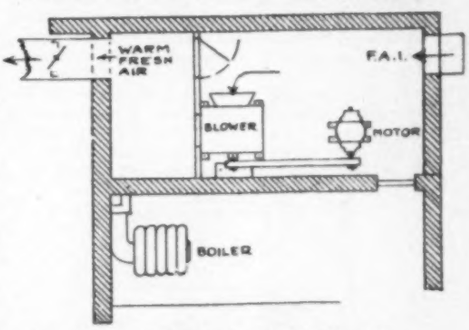
These radiators have been subjected to the severest tests in connection with petrol vapour and other explosive gases. They are fitted with pilot lights which burn continuously, and can be readily observed through glass panels which are fixed for this purpose. The consumption of gas is low, and can be easily controlled by the chauffeur, who turns the valve on when heat is required, and the flames then ignite from the pilot lights.

There is another method of using gas for heating garages. When this system is adopted a gas boiler is fixed in an adjacent outhouse, room, or small structure built for the purpose, where no petrol is stored, and one or more radiators are fixed in the garage. These radiators are heated by an ordinary hot-water circulating system from the gas boiler.

Such a system of heating can, of course, be also adapted for larger buildings where circumstances warrant its use. All that is necessary is to increase the size or number of the boilers and radiators, according to the space which they are required to heat.

GENERAL GAS HEATING.

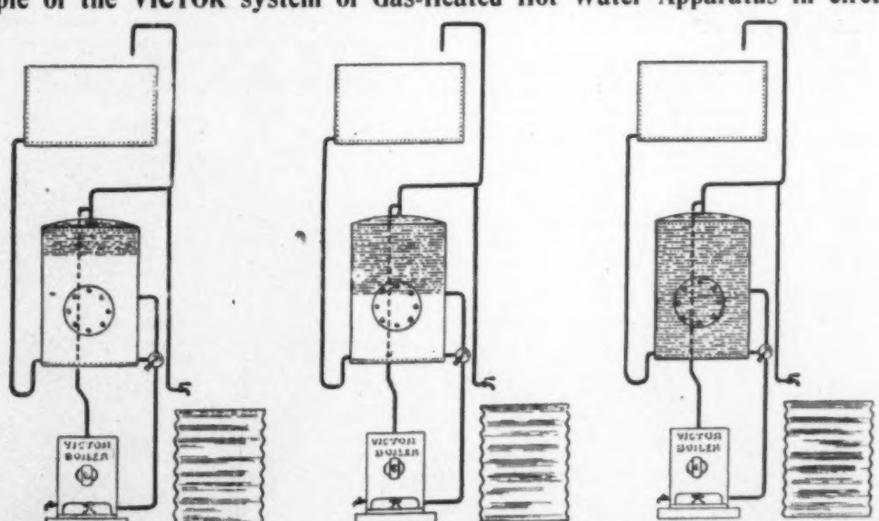
The question of employing gas for heating purposes other than in the form of gas fires is one which must not be overlooked, as it can often be used with advantage, especially under certain circumstances. For small installations where two or three radiators are required a gas-heated boiler such as the Albany boiler, which is of stout hardened copper, can be put in, and this requires no attention whatever once the gas has been lighted. Furthermore, the gas can be turned off immediately the heat is no longer required, and the boiler occupies such a small space that it can be installed in a lavatory under the basin or in a similar position, and no special chamber is required. Independent gas-heated steam radiators can also be employed where an independent radiator is desired, and with a type such as the Ewart Radiator (supplied by Messrs. Ewart & Son, of Euston-road) it is easily fixed and has no complicated parts or valves to get out of order. After the gas is lighted the water is quickly converted into steam and circulates in the radiator, and the



Messrs. Ewart's Method of Air Extraction.

GAS-HEATED HOT WATER SUPPLY.

Example of the VICTOR system of Gas-Heated Hot Water Apparatus in circulation.



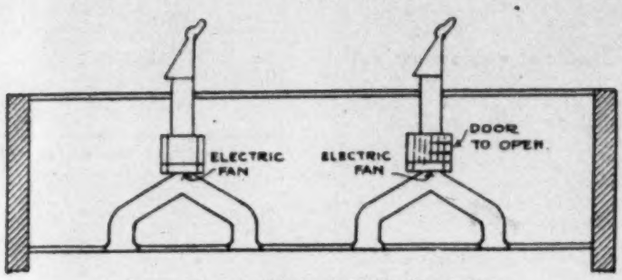
This illustration shows in three stages the effect of the "Victor" system of pipe connections, with the cut-out valve. Under this arrangement the contents of the cylinder heat from the top, storing the water at the temperature at which it circulates from the boiler, viz., about 150 deg. Fahr. This enables a small supply to be obtained at the sink or lavatory, heating a few gallons, and shutting off the gas, supposing no further demand exists for the time being.

Working from right to left, the illustrations show the action of drawing water as it should occur, the cold entering the bottom of the cylinder and following the hot water until the whole is exhausted. The cold water should not be allowed to mix with the hot in delivery.

The Cut-out Valve fitted in the lower return connection controls the circulation of the lower half of the contents of the cylinder, so that a reduced supply can be held in reserve when baths are not in demand, with economy in gas consumption.

Catalogues upon application.

THOMAS POTTERTON, HEATING SPECIALIST, **Cavendish Works, Balham, LONDON.**



Messrs. Ewart's Method of Air Extraction.

heat control regulates the gas supply and allows only sufficient gas to pass to keep the heat at the required temperature. Messrs. Ewart & Son have also patented their Radion Circulator, which is fitted with a heat-controlling valve which automatically shuts off the gas to a small by-pass when the water rises to the required temperature, thus ensuring economy. Messrs. Ewart & Son have in addition made a speciality of the economic ventilation of picture palaces and other like institutions.

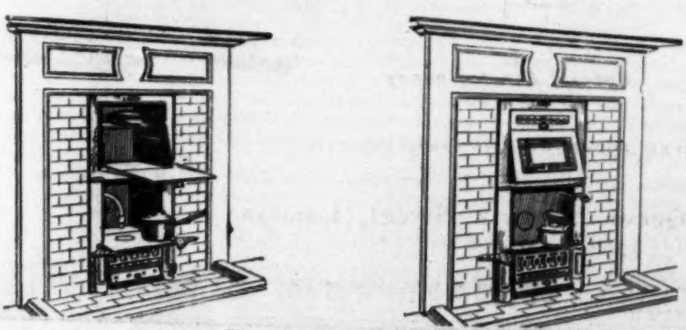
The convertible stove of the Interoven Stove Company, Ltd. (156, Charing Cross-road, London, W.C.), the "Interoven," is a combination of a sitting-room grate and a kitchen range. It can be fitted in place of any kitchen range or sitting-room or bedroom firegrate. The "Interoven" is claimed to be the only combined stove with self-acting dampers—only one damper at the top of the stove to work by hand. The stove has no opening into the flue at back, above the boiler, to induce a collection of soot above the hot plate, which is liable to fall into saucepans or on to the

"The Easy-Fit-All Barless Fire Front."

hot-plate, and there is no iron runner across the back of the fire to become twisted with heat. The hot-plate cannot be burned away or twisted by the open fire, as it does not project into the fire when not in use, being raised instead of sliding back. A great saving in fuel is effected, as the stove requires only one scuttle of coal per day, and with it will work a 40-gallon cylinder for bath water, cook the meals, and give a good open sitting-room fire for ten to twelve hours. Kitcheners will burn from three to four scuttles to do the same work. Apart from this, much unpleasant cleaning is saved. The company is opening up a new branch of business in the building trade, as the public are buying this stove to replace practically new kitcheners, which they can ill afford to keep working owing to the greatly increased cost of fuel. The bath boiler fitted at the back of the fire appears to be particularly efficient, as we understand it will work a 40-gallon cylinder or hot water tank, or can be connected to two or three radiators in rooms above the stove. The Easy-fit-all Barless Fire Front, also supplied by the Interoven Stove Company appears to be a capital arrangement for modernising old fire grates. It is constructed so that by removing detachable bars it can be reduced to fit varying widths of fires, and is so constructed that it will fit on to the old bottom gratings of various heights.

Mr. Thomas Potterton, of Cavendish Works, Ravenswood-road, Balham, S.W., is a specialist in automatic gas heated hot water supply apparatus, to which he has devoted special attention, as the use of gas for heating is developing very rapidly. The smaller illustration represents his No. 20 "Victor" boiler for application to existing cylinders

or tanks, where the houses are already so fitted, while for new installations a self-contained form of storage and boiler, as shown in the second illustration, can be adopted. Hot water heating by gas can be worked in conjunction with the kitchen range, either for supplementary or entire use, and, as in so many instances the supply in the early morning is found inefficient, the assistance of a gas heater for intermittent use is of the utmost convenience. For flats, where coal fires are now seldom used, a self-contained form of apparatus (No. 51) is usually adopted, taking up a very small amount of space and generally being fixed overhead, so that the floor space is not diminished. In this way particularly the gas-heated system affords great convenience, as the requirements are invariably intermittent, and the saving in labour effected renders flat life more possible. A special feature in regard to the action of this form of hot water apparatus lies in its quick effect, it being possible to obtain



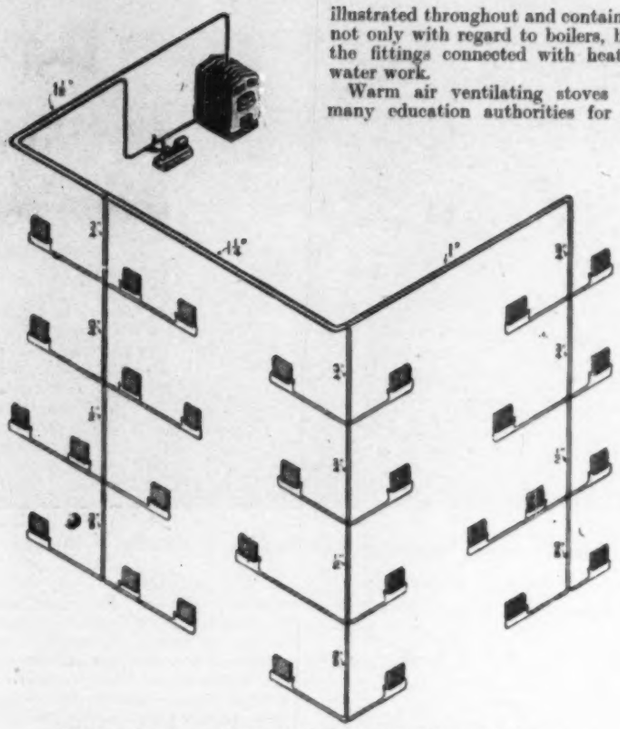
The 'Interoven' Stove.

a small amount of hot water at a high temperature without heating the bulk, which is usual with coal-fired apparatus. This result is obtained by the arrangement of the piping between the boiler and storage, which regulates the rate of circulation through the boiler to produce a given temperature, averaging, say, 140 deg. in the flow pipe, which, being delivered in the upper part of the storage without admixture with the bulk, enables hot water to be drawn quickly after lighting the gas. This form of apparatus is made in three different sizes containing 20, 30, and 35 gallons capacity, which cover the demands of an ordinary villa residence, although for larger requirements the boilers can be duplicated and the supply effected to equally good advantage. A further convenience, particularly from an economical point of view, is the provision of a cut-out valve system for reducing the amount of water heated, as, although 20, 30, or even 40 gallons storage is necessary for bath purposes, etc., a smaller supply of water would be ample for ordinary daily needs. To meet this purpose the cut-out valve system has been designed, whereby the lower part of the storage is thrown out of action, thus holding 10 or 12 gallons of hot water available for sink and lavatory uses. Such arrangement working with the automatic value renders the system extremely economical. Gas boilers are being adopted for various purposes, apart from domestic uses, including the heating of offices, small greenhouses, garages, and the supply of hot water for offices and other trade purposes, and with proper application the gas-heated system affords the greatest economy and efficiency in addition to the utmost convenience.

GENERAL HEATING.

Messrs. Benham & Sons, Ltd., of 66, Wigmore-street, W., have patented a system of hot water heating, termed the Perfect System, for which the following advantages are claimed:—It is a low-pressure system, which is simple in construction and economical in working, as well as being low in first cost. A uniform temperature can be obtained with very small circulating pipes, which can be run irrespective of levels, and no pipe trenches or special boilers are required. The boiler can be fixed on any floor, fuel cannot be wasted, and the fire can be banked at night. A temperature of from 180 to 190 deg. can be obtained on the radiators emitting 200 to 210 British Thermal Units per hour, the Perfect System giving 200 as against the 150 obtained from the gravity system. The method thus employed is to place on the return main of the apparatus a Perfect Circulator, which can be worked by a small electric motor, hot air or petrol engine, the cost of which is small and is more than saved by the economy of fuel effected by its use.

The selection of the boiler in connection with a heating apparatus is an important matter, and it is worth while spending time and thought on this point before coming to a definite conclusion as to the type to employ. A very useful volume is published by Messrs. Hartley & Sugden, Ltd., dealing with the various types manufactured by them, and this



Messrs. Benham & Sons' "Perfect" Heating System.

book contains in addition many useful tables and notes for the use of architects and engineers.

The "White Rose" boilers manufactured by this firm are well known, these being designed to burn for long periods without attention. Professor Burstall, M.A., M.Sc., conducted a series of tests which proved that these boilers, working with a natural draught of $\frac{3}{32}$ in. of water and when covered with asbestos cement, will give an average efficiency of 85·2 per cent., which is extremely good. The book is well illustrated throughout and contains information not only with regard to boilers, but also of all the fittings connected with heating and hot water work.

Warm air ventilating stoves are used by many education authorities for school class-rooms, these being designed to both heat and ventilate the room in which they are fixed. The principle on which they are designed is that of allowing fresh air from the outside of the building to enter under the hearth plate and circulate round the back of the fire inside the stove casing. The air is thus warmed to a moderate temperature before passing into the room, which it does through regulating gratings in the side panels. A well-known type is that known as the "Hygiastic" (supplied by Messrs. O'Brien, Thomas, & Co, Upper Thames-street), which is made in several sizes, and used by the London County Council Education Committee.

The great advantage of having a fire in the dining or sitting room, and at the same time warming several other rooms by utilising the waste heat from this one fire, will be so apparent to everyone that it needs no special recommendation. This object can be attained by the use of the patent "Nautilus" boiler fire (the Nautilus Fire and Heating Company, Oxford-street, W.), which can be fitted either in the form of a dog grate or an interior grate, and the appearance of the fireplace is not in any way interfered with. The boiler is situated at the back of the grate, where it is out of sight, and this has an intersecting flue controlled by dampers. The necessary piping is run from this boiler to the radiators, with regulating valves in each room, and the boiler is provided with a safety valve. A small tank with ball valve is installed, with connection to main cold water supply, or the tank may be filled by hand, as the only supply required is that necessary to make up what is lost by evaporation. It is a very simple method, and should commend itself as being efficient and economical.

The Gasco boiler for hot-water supply (Messrs. Robert Jenkins & Co., Rotherham) is specially designed to supplement the gas-cooker in the modern kitchen. It is a wrot welded independent coke fired boiler, made in three sizes to give respectively 27, 39, and 50 gallons of hot water at 150 deg. Fahr. per hour with ordinary unskilled attention. In addition to this, the Gasco can act as a refuse destructor; all waste food bones and other combustible matter may be burned quickly and safely, and the fumes escape through the flue. The advantages of an open fire are provided by lowering the fall door, which is also a support on which to heat flat-irons. In large kitchens a radiator may also be heated from the Gasco to warm the kitchen thoroughly in winter. A hot closet on the top of the boiler is heated by the waste gases. Food may be kept hot in it and dishes and plates warmed. Extra plates can be stood on the detachable plate-rack. The fire needs little attention; once every eight hours should be sufficient.

G.E.C.

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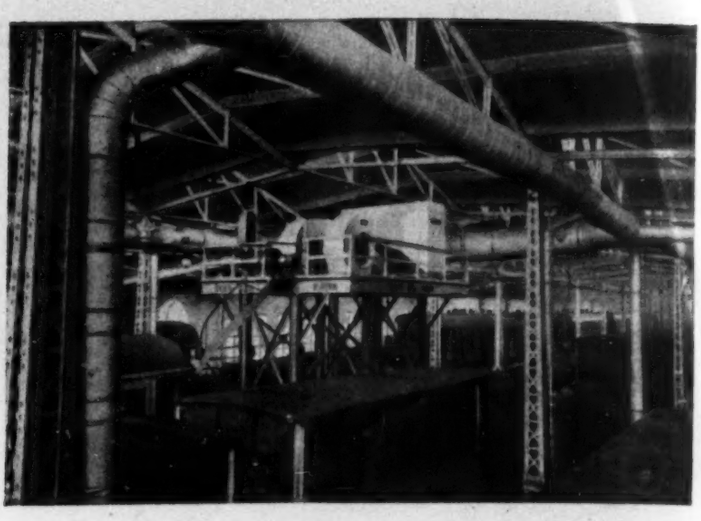
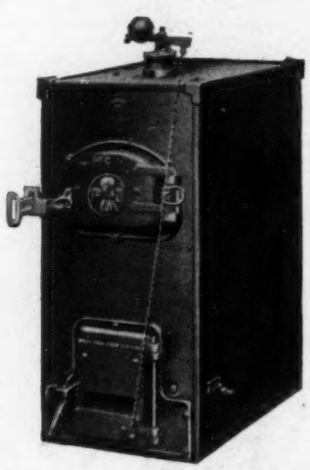
The "Gasco" Boiler.



The Sturtevant Installation in a Railway Workshop in Russia.

The new series of sectional boilers, the "Ideal" G series (the National Radiator Company, Ltd., Hull, London, etc.), are constructed on scientific principles and embody the most recent improvements in boiler design, so as to utilise practically all the heat value of the fuel. It is claimed that they require no loose base,



The No. 1 "Ideal" G Series Water Boiler.

thus overcoming the difficulty often experienced in forming an airtight joint between sections and base. Special attention is directed to the small space occupied by these boilers, and to the low height of the flow tappings, viz., 35½ in. for the No. 1 "G" series and 38 in. for the No. 2 "G" series boilers. The Nos. 1 and 2 "G" series boilers range in capacity from 400 to 2,600 lineal ft. of 4-in. pipe, and larger sizes will be available very shortly. A patent insulating jacket covering all exposed surfaces can be supplied for these boilers; this jacket is complete in itself, consisting only of five pieces, which can be fixed in a few minutes. The illustration shows the No. 1 "G" series water boiler fitted with patent insulating jacket.

The London Warming and Ventilating Company, of 20, Newman-street, manufacture a large selection of anthracite stoves, a form of heating which has many advantages, including those of efficiency and economy.

Messrs. Fenlon & Son and G. Shrewsbury & Co., of 8, Tudor-street, E.C., have patented a new accelerated circulating system which has the advantages of heating above and below the boiler and is suitable for use with gas, coke, or other fuel. It is one of the systems in which smaller bore pipes may be used.

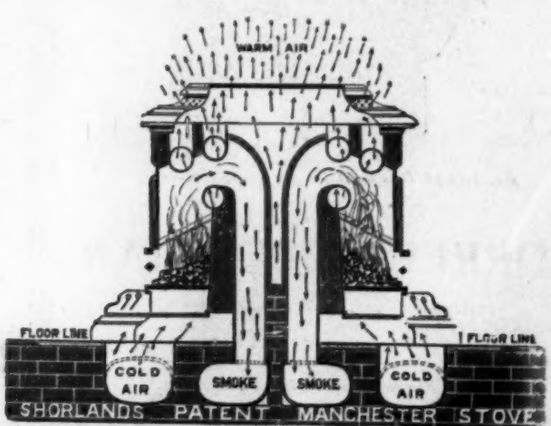
Messrs. Shorland & Brother, Ltd., are well known for many specialities in heating and ventilating, the best known of which is their excellent Manchester grate, which is largely used in hospital and infirmary wards, and which stands the test of time. Their exhaust roof ventilators are well known and they have patented a hygienic inlet ventilating panel, which by one movement allows the front of the ventilator to be taken out, so that the interior of the ventilator can be cleaned at any time.

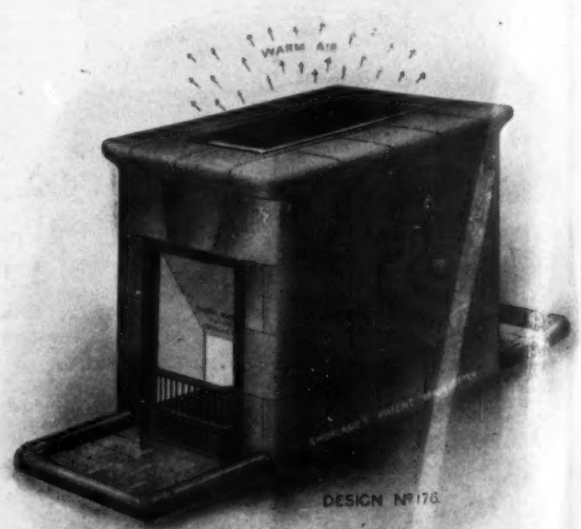
MECHANICAL HEATING AND VENTILATION.

The Sturtevant Engineering Company, Ltd. (147, Queen Victoria-street, London), have made a name for themselves, both in this country and America, by their application of the Plenum system of heating, which consists in the introduction and distribution of fresh warmed air which has been drawn in by fans placed in a basement, and provided with washing screens to every part of a building by means of main and branch ducts which are scientifically graduated in size. Such a system ensures uniformity of heating and ventilation, and obviates inequalities, while it can be regulated at will and fire risks are eliminated. We illustrate their system as applied to a large Russian workshop.

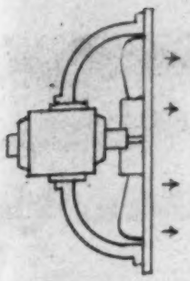
Messrs. James Keith & Blackman, of 27, Farringdon-avenue, E.C., make a speciality of high-pressure gas by which ordinary gas is used under pressure, which effects a large reduction in price per 1,000 ft. light for light. In some instances this saving amounts to 75 per cent. This result is produced by the use of Keith's Rotary Compressor. Messrs. Keith & Blackman's fans are well known and appreciated; they also manufacture an inclined tube thermo-ventilator and a large selection of lamps, compressors, and other gas specialities.

The General Electric Company, Ltd., of 67, Queen Victoria-street, London, E.C., have erected at Witton a separate factory devoted to the construction of electric fans. Standardised methods have been adopted, so that interchangeability is secured and replacements can be readily effected. Fans can be supplied in any colour to harmonise with decorations or with nickel-plated fittings at a slightly higher cost. In the 12-in. and 16-in. desk fans are combined the three styles usually known as desk, trunnion and bracket. The provision of two sockets at right angles to one another, each having a clamping screw, permits of the ready transformation from one type to the other without the addition of any fresh part. A specification sheet is sent with quotations for "Freezor" fans, and the six diagrams we publish are interesting as showing the number of different ways in which the exhaust fan can be fitted. The latter point is particularly important, as, unless the exact position in which the fan is to run is known, the efficiency



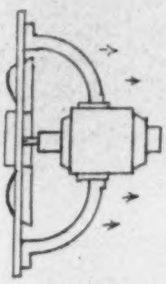


The Manchester Stove.



Form A.

Vertical running (with horizontal spindle). Blades blowing away from motor.



Form B.

Vertical running (with horizontal spindle). Blades blowing over motor.

(Other diagrams, C to F, which our space does not enable us to give, show methods of fixing in other positions.)

and life are both impaired, perhaps very seriously. For instance, it is impossible to adopt the best form of lubrication unless the position in which the motor is to run is known.

The same firm manufacture all kinds of electric heating appliances for use in the home. The accompanying illustration shows their latest type of the "Magnet" electric fire (panel type). It is obtainable in three sizes—1.5, 2, and 3 kilowatts respectively. These fires are very robust, and the heating elements last for a long time. Spare elements can be obtained very cheaply for renewing, and are readily substituted for the old ones. Double pole

The "Magnet" Electric Fire.

switches are used for the control. The elements consist of a special fireproof former suitably designed to maintain the helically wound resistor in position, and yet allow for expansion. The terminals and all details are of ample dimensions and solidly constructed.

NATURAL VENTILATION.

Natural ventilation has great possibilities when properly applied, and, as it cannot get out of order and is self-acting in every part, it is not surprising to find that there are many advocates of this method amongst architects and engineers. The exploitation of natural ventilation to any great extent has been confined, however, to Messrs. Robert Boyle & Son, who have studied the subject from every possible point, and are able to give schemes for different classes of buildings which have been tried and found extremely satisfactory. The principle of natural ventilation is, of course, that of providing extracts at the highest part of the apartment with fresh air admission at a lower level, this fresh air coming in at a low velocity and in an upward direction. Advantage is taken of the natural tendency of the vitiated air to ascend, and the extraction is achieved by means of Boyle's patent "air-pump" ventilators. These "air-pump" ventilators are designed on a scientific principle, as the extracting power of a roof ventilator of correct scientific construction is solely determined by the size of the head, and not by the diameter of the shaft attached to it; small pipes can be employed with the "air pump," thus reducing the cost without affecting the efficiency, friction, of course, being allowed for. The arrangement of the ventilator consists of metal plates at certain angles enclosing a central chamber, from which the air is exhausted through a series of protected openings, by the movement of the external air through annular spaces, and deflected across the openings at given angles in a compressed form, creating an induced current, and also a partial vacuum by exhausting the air from the central chamber and removing the pressure of the atmosphere from the top of the shaft. The foul air in the room being ventilated immediately ascends the shaft to take the place of the air exhausted, a continuous and powerful upward current being thus maintained. The "air-pump" ventilator is constructed on sound scientific principles, acts in strict accordance with the laws of nature, and the different parts are so nicely adjusted that the gentlest movement of the air impinging upon them acts as a motive power for exhausting the vitiated air.

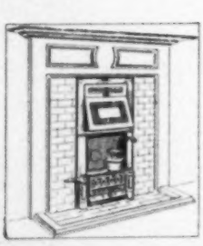
The Ozonair apparatus, which we have referred to in past issues and fully described, has been used in many buildings and in the Tube railways with marked success.

Messrs. Crompton & Co., Ltd., of Chelmsford, manufacture some of the latest types of continuous current motors, which have been specially designed with a very liberal rating, having a low temperature rise, high efficiency, and large overload capacity.

The Igranic Electric Company, Ltd., 147, Queen Victoria-street, London, have recently introduced a device which enables the speed of ventilating fans, as well as the starting and the stopping of them, to be controlled by push buttons placed actually in the rooms which the

THE
"INTEROVEN"
(PASCALL'S PATENT.)
THE ONLY RELIABLE.

Convertible from COOKING STOVE to PARLOUR GRATE



instantly whilst Fire is Burning.

PERFECT OVEN AND HOT WATER SUPPLY GUARANTEED.

Builders are specially warned against unworkable imitations!

Prices from **75s.** Boiler extra.

The Inter-Oven can be fitted into any room and will cook for nine persons.

Write for List S7 from Sole Makers:

THE INTEROVEN Co., Ltd.

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HIGHEST AWARDS: Roy. San. Inst. Exhibitions, Brighton, Belfast, and Blackpool.

"TRIPLEX"
GRATES

Are Good Cookers. Powerful Water Heaters.

An Ideal Grate for an Ideal Home.

HORRELL & BOWMAN,
Range and Grate Makers,
BIRMINGHAM.

LONDON AGENTS:
PRYKE & PALMER, 40, Upper Thames St., E.C.

fans are ventilating. This is of interest, as everybody has hitherto recognised that the control of a ventilating fan placed at a distance from the room that it was ventilating presented a difficult problem. In many cases the problem has been partially solved by providing in the ventilated room means for stopping and starting the fan from within the room, but to regulate the speed of the fan from within the room has not hitherto been found practicable. The new "Igranic" Push Button Control System, by the use of their Patent Compensated Solenoid Controller, deals with this difficulty. The controller itself is not placed in the room, but is mounted in a convenient position near to the electric fan, and small control wires are led down to a convenient position in the room. These are connected to push buttons, each of which is clearly marked with an inscription indicating its function. There are four buttons marked respectively "Start," "Accelerate," "Retard," and "Stop," and the pressure of any one of these buttons immediately produces the result indicated by the inscription. We are informed that control gear of this kind is just about to be installed in the Institution of Civil Engineers in London.

GERMAN COMPETITION IN THE ELECTRICAL INDUSTRY.

Few industries in this country have suffered more from German competition than that which is concerned with the manufacture of electric lamps and of plant for the generation of electric current.

That Germany attaches importance to the extension of her electrical exports is proved by our Board of Trade returns, which during recent years have recorded the vast growth of Germany's electrical imports to this country.

It is also indicated in the Parliamentary Paper just issued. This paper mentions that throughout the early months of this year there was extraordinary activity in German industrial circles to promote schemes for pushing German exports. The outcome of this activity was the formation of an official German organisation for influencing the Press of other countries. At the meeting held for the purpose of forming this organisation nine representatives of Germany's leading industrial firms attended. Of these representatives two were of steamship companies, three were of banks, two were of armament firms, and three represented German electrical firms.

Most of the German electrical concerns established in this country have hidden their Teutonic nationality under purely English names. Many of them had large warehouses, which they kept constantly stocked with articles, every one of which was made in Germany, and, of course, all the profits made by these concerns were promptly remitted to headquarters in Germany. Some of them have even gone to the extent of establishing works in Great Britain in order to comply with the provisions of the Patent Acts.

It is a satisfaction to know that since the outbreak of war some of these German electrical businesses have had to close their doors, but many of them are still in a position to continue their activity by reason of the very large stocks which they had accumulated here up to the time of the outbreak of hostilities. It is therefore desirable that users of electric apparatus should confine their purchases to those articles which are undoubtedly of British manufacture. There are in this country British firms which are fully capable of supplying all our requirements.

The British Thomson-Houston Company is, as its title indicates, of British origin. It has works in Rugby, Coventry, and Willesden, and offices in all the principal cities in the United Kingdom. It gives employment to many thousands of British workers. The company cover in their operations practically the whole field of electrical engineering and manufacture. They are the owners of the British fundamental patents, for the manufacture of drawn wire tungsten electric lamps, and their Mazda lamps are recognised as the standard of quality. Mazda lamps are British-made throughout, and as regards economy of current, brilliancy of light and durability are better than the best German lamp on the market.

In view of the interest taken at the present time by the public and the Press in all matters concerning British manufactures, the General Electric Company, Ltd., arranged for a special visit to their Osram Lamp Works, at Brook-green, Hammersmith, W., on Wednesday last, when a large party of the Press were present. The visitors were conducted through each department of the factory, where they were shown the various processes of manufacture of Osram lamps. It is probably well known that the metal filament lamp is an Austro-German invention, developed into a practical article at the cost of much time and expenditure. When in practically the elementary stage, the General Electric Company, conscious of the possibilities which lay behind it, acquired British patents, and established for the first time in this country the metal filament lamp industry. Their factory at Hammersmith is installed with the best plant procurable. They have trained British people in the entire work of the laboratory and workshop, including every process involved in the production of Osram lamps. There is not a German subject in the employ of the company, we understand, neither was there previously to the outbreak of war, with the exception of one chemist. But during the erection of the factory and the necessary training of the workpeople, Osram lamps were imported from Germany, and for some time after the factory was running the demand was so great that the factory output had to be supplemented by a small proportion of imported lamps. These importations, however, gradually became a decreasing quantity, until for some time before the declaration of war the whole of the consumption of this country was supplied from the Hammersmith factory, with the exception of a few lamps of entirely new or quite special types received by the company from either the French or German Osram factories, under an arrangement with the company to exchange samples of new productions of each of the Osram works. Under this arrangement a few new types of lamps have been sent from the Hammersmith Works for distribution in Germany, and through it also the Osram Company recently introduced the Half-Watt lamp, which they are now manufacturing for themselves here. The company, from the outset, has had its own glass bulb factory in this country, and although the works, which are at Leamington-on-Tyne, were small originally, they have grown to such an extent that besides meeting all the Osram requirements, they are in the position to be able to spare a portion of their output to other British lamp makers. Hitherto all the brass caps for electric incandescent lamps made in Great Britain have been imported from Holland and elsewhere, but the Osram Company have now established a plant of their own, and will in future be independent of all foreign sources of supply of parts and raw materials. There is a very large staff of workpeople employed at the Hammersmith factory, who are turning out lamps at the rate of seven millions a year.

The W. T. Henley Telegraph Works Company's wiring system has the advantages of low first cost, ease, and simplicity in fixing, and minimises cutting away, involving little or no damage and expense in redecorating. It has been extensively used.

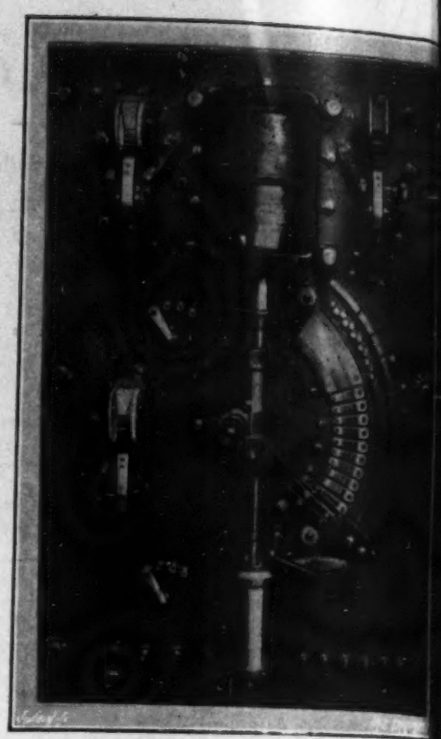
NEW COMPANIES.

THE undermentioned particulars of new companies recently registered are taken from the Daily Register compiled by Messrs. Jordan & Sons, Ltd., Company Registration Agents, Chancery-lane, W.C. :—

RILLINGTON BRICK AND TILE COMPANY, LTD. (137,596). Registered September 5. To acquire business of brick and tile manufacturers carried on at Rillington, Yorks, and enter into agreement. Nominal capital, £2,500 in £1 shares.

BILLY MILL QUARRY LIMITED (137,591). Registered September 5. To carry on business of brick manufacturers and quarry owners, builders, contractors, etc., and to enter into agreement. Nominal capital, £2,000 in £1 shares.

COALMOOR SANITARY PIPE COMPANY, LTD. (137,592), Horsehay, Salop. Registered September 5. To acquire the goodwill, mineral rights, plant, machinery, stock, etc., connected with the business of colliery owners, coal merchants and manufacturers, and dealers in glazed earthenware pipes, bricks, and tiles formerly carried on by the Coalmore Sanitary Pipe Company at Horsehay.



The Igranic Electric Co., Ltd., Push Button Control.

ROGERS, WELCH, & Co., LTD. (137,601), 26, Page-street, Westminster, S.W. Registered September 7. To carry on business of manufacture and sale of paint, varnish, etc. Nominal capital, £1,000 in £1 shares (500 Preference and 500 Ordinary).

EAST BRISTOL COLLIERIES, LTD. (137,607). Registered September 8. To acquire mineral and certain other property of the Bedminster, Easton, Kingswood, and Parkfield Collieries, Ltd., and to carry on business of colliery proprietors, coke manufacturers, and miners, and to deal in coal, cannel, iron, ironstone, clay, brick-earth, and to manufacture and sell patent fuel, briquettes, coke breeze, culm, bricks, terra-cotta, etc. Nominal capital, £35,000 in £1 shares.

COLONIAL NEWS.

Canada.—Large numbers of skilled and unskilled labourers are out of work in Canada at the present time.

Union of South Africa.—There is no demand for more labour in South Africa at the present time.

Rhodesia.—In Rhodesia work for mechanics is highly paid but intermittent, and living is expensive; there is no demand for unskilled labourers, as coloured natives are employed. There is no present unsupplied demand for labour, and many persons are in a destitute condition.

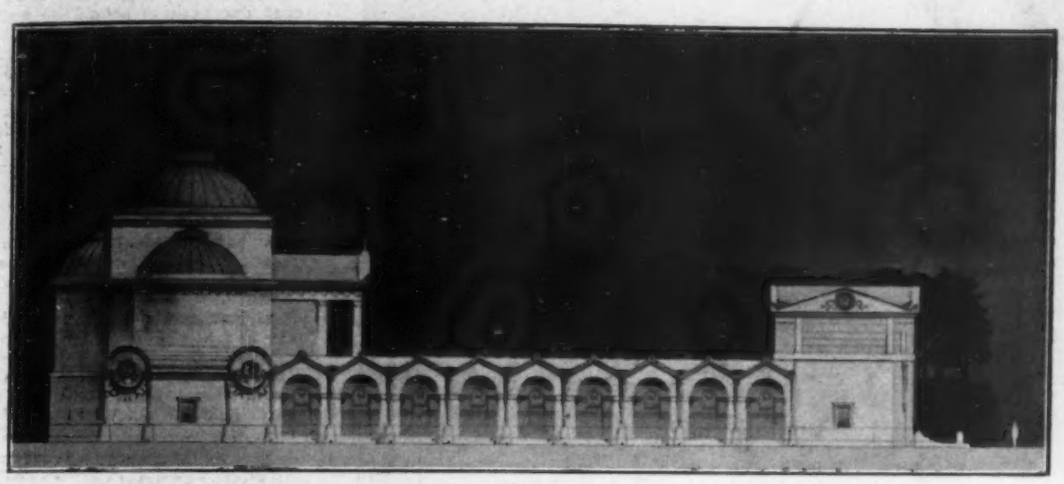
United States of America.—A report has been received to the effect that the labour market is overstocked; that unemployment, especially among unskilled labourers, is very prevalent; and that competition for a vacant berth is as keen in New York as in London.

Argentine Republic.—It is dangerous for the ordinary British emigrant without capital to proceed to Argentina unless he has obtained employment there before leaving this country. Otherwise he will, on arrival, be compelled to search for work in a country whose language, laws, climate, money, and conditions of life and work are entirely different from those to which he has been accustomed, and he will run great risk of becoming destitute.

Ceylon.—It is necessary to warn emigrants against going to Ceylon without either considerable capital or assured employment. It has recently been necessary for the Government of the Colony to repatriate individuals who had gone to the Island with insufficient capital, and who, failing to obtain employment, were reduced to a state of destitution. It is useless for anyone to go to Ceylon in the hope of obtaining employment on the spot.

London: Printed by the FIELD & QUEEN (HORACE COX) LTD., at Windsor House Printing Works, Bream's-buildings, E.C., and Published by THE BUILDER LIMITED, at 4, Catherine-street, Aldwych, W.C.—September 25, 1914.

ARCHITECTURAL SCHOOLS SECTION.

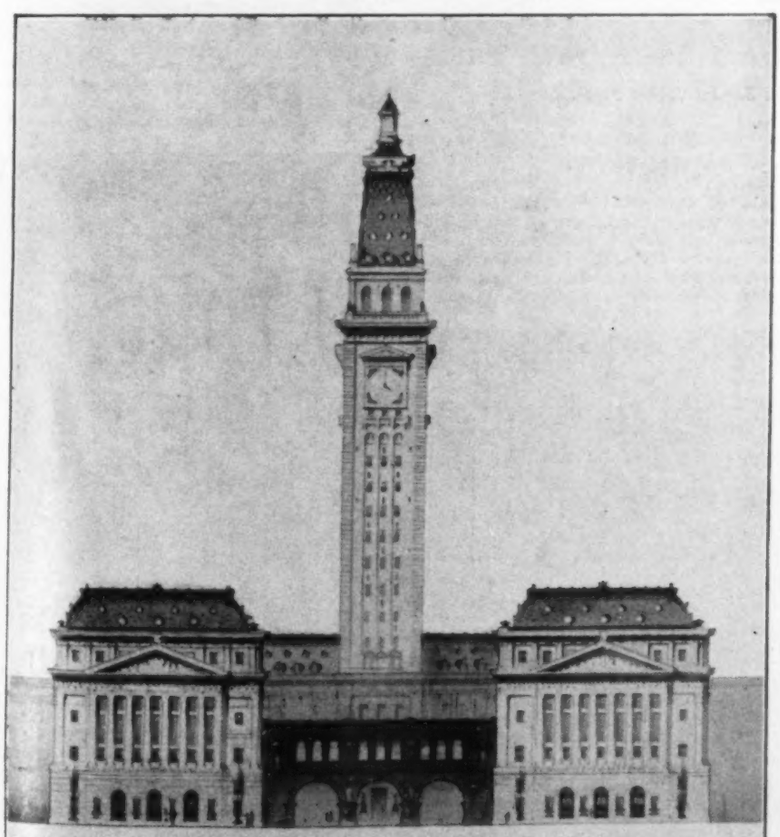


Liverpool School of Architecture: Measured Drawing of La Chapelle Expiatoire, Paris.

By Mr. E. R. F. Cole.

THE SCHOOL OF ARCHITECTURE, LIVERPOOL UNIVERSITY.

THE Editor has asked me to write a note on the work of the Liverpool School to accompany the drawings of the school work which he is illustrating. The latter were chosen from the annual exhibition held last July. At this exhibition each student who is competing for the University Certificate or Degree is given a separate cubicle in which he holds a one-man show. The work so hung consists of the designs made during his course to the School programmes and the measured drawings which are still required from every student. Among the School programmes are included a number of sketch designs and the designs set by the Institute as testimonies of study for their final examination. Before the exhibition is open to the public the University examiners, together with Mr. Ernest Newton, the external examiner, hold an oral examination of each student in his cubicle, and examine the work hung there. This is in addition to the written examination and the examination in design, and with them I venture to think forms a very complete test of a man's fitness to start an architectural career. The old difficulty of examining in an art like architecture, where individual taste still plays so large a part, is practically eliminated when before the examiners is placed the progressive work of a student covering a period of two or three years. There is never any real difficulty in deciding then that this man is a good man, who deserves to go on and become an architect, and that another should be advised to give it up and go in for cotton. The R.I.B.A. examinations, being still mainly written examinations about facts, cannot, so it seems to me, make this claim for a man with the same certainty as we can. It is still possible to imagine a student with a retentive memory and a German thirst for facts who could do very well in the R.I.B.A. Intermediate or Final and be a hopeless architect afterwards. On the other hand, we all know cases of Soane and Tite prizemen who have never become Associates of the Institute, and that largely because they feel the test applied is not one they can wholly respect. I venture to take this opportunity of suggesting that the work done during the courses in all the recognised schools should play a much larger part in qualifying for membership of the Institute than it does at present.



Liverpool School of Architecture: First Lever Prize for Group of Buildings to form part of a Town Improvement Scheme.

By Mr. B. A. Miller.

With regard to the type of design favoured by the Liverpool School it will be noticed that here, as elsewhere, the type is undergoing enlargements. Gradually the whole classical field is being recovered. All fully-developed classical architecture—Greek, Roman, Italian, or American—is now considered grist to the mill. Modern French detail is not considered sufficiently universal in character, and we are resisting as best we can the present tendency to copy everything French.

Ten years ago, when the School passed into my hands, it was necessary for our own sake, teachers and scholars alike, to do a certain amount of pioneer work. We had to set out to try and recover a tradition. We had to make our first shaded drawings by the light of our own ideas. If the Orders at that time were drawn at all—and it was then a daring thing to worry about them—they were drawn with the thick black line which was left behind as a trail by the Gothic revival. Current numbers of the building papers provided the vernacular detail which was mostly Dutch rococo. Measured drawings of purer work became an absolute necessity for masters and students alike, and, luckily, St. George's Hall was at hand. Elmes' and Cockerell's Greek detail was the best corrective to modern "fine classic." Its purity and hardness even provided the right medium for the beginner to work in. He could not be sloppy in it. It gave him a standard of taste and excellence and prevented undue individual expression. Although he may not have appreciated the subtlety of the detail—very probably he did not—the apparent simplicity of it allowed him to concentrate his main attention on the mass. In the early days of either a school or an individual I am convinced

Liverpool School of Architecture: Second Lever Prize.

By Mr. F. Jenkins.

that a severe academic regimen is the right one. Later, the variety of the *menu* can be increased. Once Greek detail had been absorbed and had become, through the accumulation of measured drawings and plates, the common property of all it was possible to go on to the consideration of other detail. Italian and American varieties of the classical theme were brought out of the library. And just as Mr. Richardson has explained in his fine book how, after the Greek phase in the nineteenth century, there followed a phase which he calls "Neo-Grec and Italian," but which was really a universal phase when for the first time the whole resources of classical architecture were used by the best architects in the solution of modern problems, so in a very much smaller way, having learnt our lesson in essentials in Greek detail, we have lately felt we could proceed cautiously another step towards complete freedom and emancipation.

I have mentioned this question of detail and modes of expression because it has been a source of controversy in the past, and I am anxious that our position should be made clear. It must be understood, however, that designs are not approached by us in Liverpool as so many stylistic exercises, but as definite problems to be considered each in its own inherent character. In my view the most valuable lesson the French have to teach us in architecture is the value of character in design—character not only in detail, but in the whole conception and plan.

The University has recently founded for those who want especially to study design in the Liverpool School a new course and Certificate in architectural design. Students entering for this course are expected to have made some little progress in their work and to have reached about the standard of the Intermediate Examination. The course is a short one, and can be taken in one session in the Day School, or two sessions in the Evening School. During the course students can prepare some of the larger schemes for testimonies of study for the Final R.I.B.A. and their thesis design for this examination.

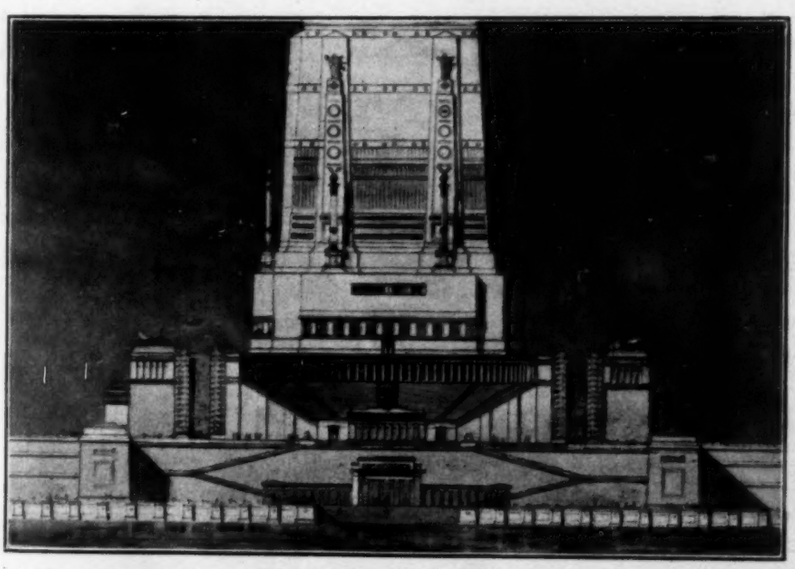
C. H. REILLY.

EDUCATIONAL COURSES IN ARCHITECTURE AND BUILDING.

THE curriculum of the Architectural Association School of Architecture for the session 1914–1915 gives an excellent and concise summary of the admirably-organised system of architectural education which has been so efficiently and thoroughly carried out under Mr. Robert Atkinson. We cannot exaggerate the value of the training now being given by the Association, and when we recollect that it is the only professional school managed entirely by the profession and supported entirely by voluntary effort, we feel that architects have every reason to be proud of it and give it every support in their power in the future, since we believe it to be the most efficient of the various teaching institutions open to architectural students.

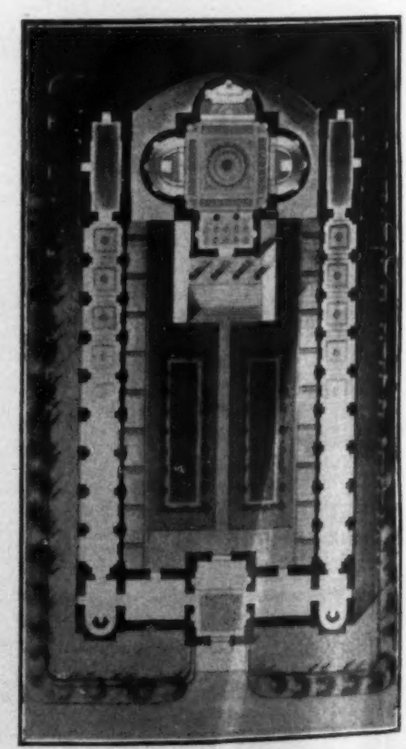
The prospectus of the Central School of Arts and Crafts in Southampton-row issues its prospectus for the session 1914–1915. The instruction given is divided into the following main groups, which are concentrated as far as possible on separate floors:—

Architecture and the Building Crafts, Silver-



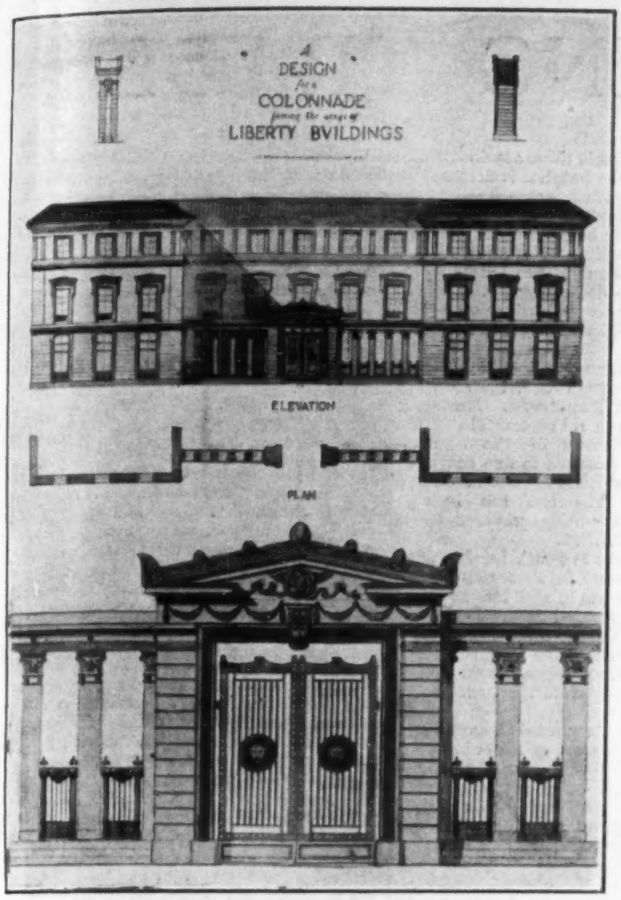
Liverpool School of Architecture: Design for a Monument to Commemorate the Universal Adoption of the Greenwich Meridian.

By Mr. T. J. Jenkins.



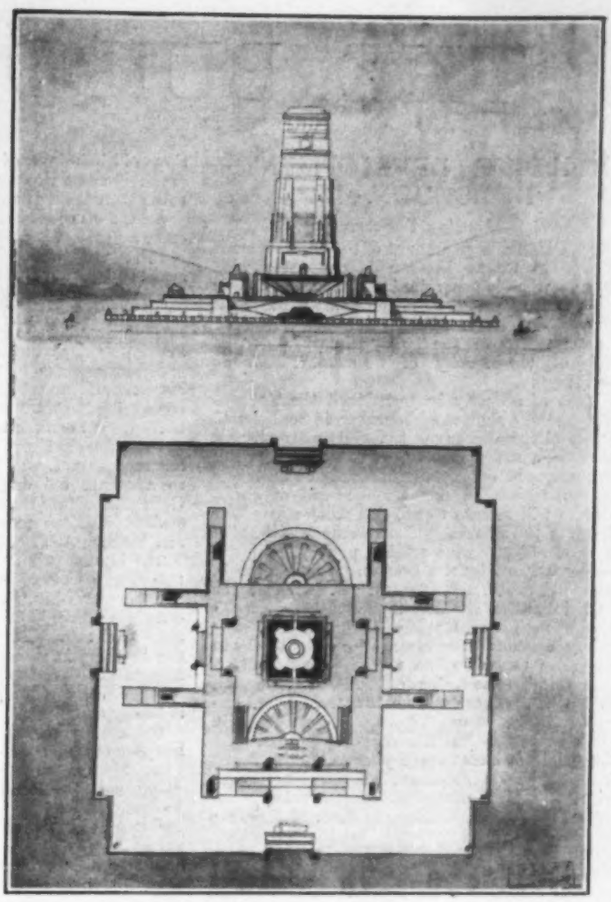
Liverpool School of Architecture: Plan of La Chapelle Expiatoire, Paris.

Measured Drawing by Mr. E. R. F. Coe.



Liverpool School of Architecture: Design for a Colonnaded Screen.

By Mr. A. B. B. Jopling.



Liverpool School of Architecture: Design for a Monument to Commemorate the Universal Adoption of the Greenwich Meridian.

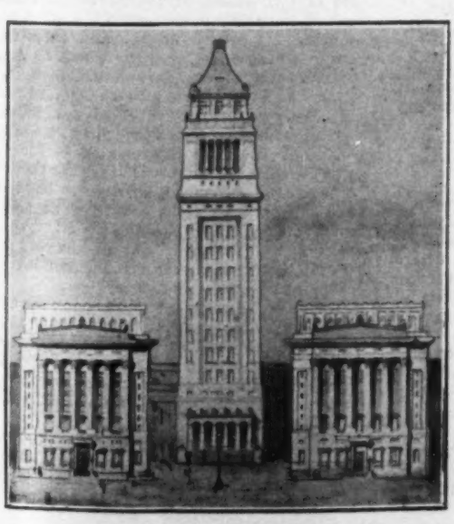
By Mr. T. J. Jenkins.

smiths' Work and the Allied Crafts, Book Production, Cabinet Work and Furniture, Drawing Design and Modelling, Decorative Needlework. The architectural staff is an excellent one, teaching being given in Architectural Drawing and Design, Drawing for Architects, Building Construction, Structural Mechanics, Architectural Wood-carving, Stone-cutting, Ironwork and Art Metalwork, and Bronze and Metal Casting by special instructors.

The prospectus of the Northern Polytechnic for the coming session affords further evidence of the work the London County Council are doing for technical education in London. The day schools comprise an Engineering Day School, University Day School, Architectural Day School, Building Trade School, Secondary School, Commercial Day School, and Domestic Economy Day School, while almost every subject is also covered in the evening classes.

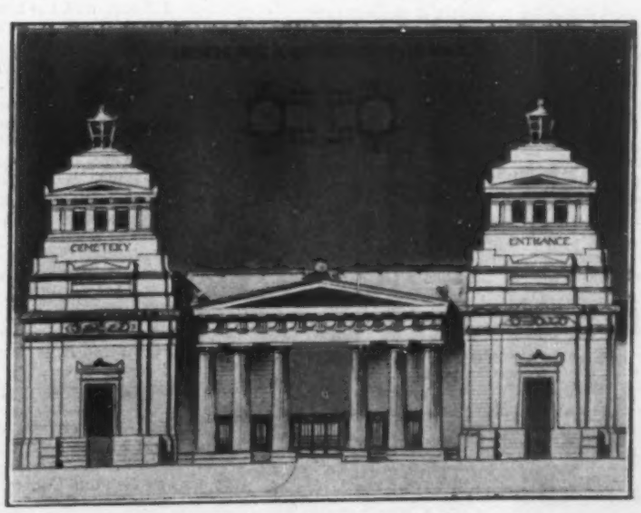
Physics, Chemistry, Photography, Rubber, Biology, Human Physiology, and Hygiene as well as Engineering and the Metal Trades, Surveying, Architecture, and Building are all covered by the curriculum. We have referred elsewhere to the strenuous efforts which are being made by the London County Council to replace the loss occasioned by the dying-out of the old system of trades apprenticeship.

The Westminster Technical Institute, of which Mr. J. Stuart Kerr, B.Sc., A.M.Inst.C.E., is Principal, send us their prospectus and time-table for the coming session. The subjects taught include Engineering Drawing and Design, Mathematics in all applied and technical branches, Mechanics, Structural Engineering and Design, including that of reinforced concrete Hydraulics, Surveying and Levelling, Civil Engineering, Estimates and Practice, Gas Engineering, Fitting and Supply, together with Workshop Practice. Technical Calculation and Drawing, and the science of Gas Supply and Gas Engineering and Manufacture. Heating and Ventilating Engineering is also dealt with. The Architectural and Building Section includes Technical Drawing, Building Construction and Drawing, Architectural Drawing and Design, the History of Architecture, Builders' Quantities, Structural Design in Reinforced Concrete, Building Laws, Sanitary Science and Hygiene, Valuations, Masonry, Cabinet Making and Design, as well as general art classes for Drawing and Painting from the Life, Costume, Modelling, Antique and Elementary Drawing, and Wood-carving.



Liverpool School of Architecture: Second Lever Prize. Design for Municipal Offices.

By Mr. A. B. Shibley.



Liverpool School of Architecture: Design for a Cemetery Entrance.

By Mr. W. A. Batty.

THE BUILDING TRADE.

BUILDING DEVELOPMENTS IN LONDON.—IX.*

Housing Problems.

QUITE a large amount of the building work in South London is connected with what is generally known as the housing problem. The difficulties are being faced in various ways, from the huge blocks of "dwellings" to the ideal miniature garden city of the Duchy of Cornwall Estate at Kennington.

First of all may be mentioned the Tabard-street area, a slum neighbourhood in Southwark, which will disappear shortly. Some demolitions have been made already, and when eventually the proposed cottages and blocks of buildings are substituted a recreation-ground of about 5 acres will remain to provide much-needed air space in the district. The scheme is estimated to cost about half a million pounds, and will be carried out by the London County Council, with Mr. W. E. Riley, F.R.I.B.A., as Superintending Architect.

In Plough-road, Rotherhithe, near the Surrey Docks, a site is being cleared for eight blocks of dwellings to be erected for the W. R. Sutton trustees from the designs of Mr. E. C. P. Monson, F.R.I.B.A. There will be 194 tenements, one room, two room, and three room; each kind will be complete with its own bathroom, etc. There will be a common drying-room for washed clothing and a coal-store, from which tenants will be supplied as required at cost price.

Ten blocks of dwellings, five stories high, are in course of completion in Rodney-street, Walworth. These are for the Peabody Trustees. The architect is Mr. Victor Wilkins, and the general contractors are Messrs. William Cubitt & Co. There are 180 self-contained one, two, three, and four roomed tenements. A centre one-story block provides a steam-heated laundry, steam drying-horses, a bathhouse, and a large shelter. Grouped round this block are perambulator and bicycle sheds.

In Warner-road, Camberwell, Mr. Nelson Wise is excavating part of a site, and Messrs. Moss & Sons are preparing the foundations for a large building. This will consist of seventeen blocks of dwellings, five stories high, for the Samuel Lewis Trustees. There will be 300 tenements, each with its bath, hot water to sink, and so on, a special drying-room block being provided for common use. The cost, exclusive of land, is estimated to be £71,000. The architects are Messrs. Joseph & Smithem.

An extensive site has been cleared in the Kennington Park-road, near St. Mary's Church, Kennington. Here will be built twelve blocks of dwellings, five stories high, for the Guinness Trustees. There will be 228 tenements of one, two, three, and four rooms. Bathrooms will be provided in a separate block, with covered playgrounds, shelters, cycle-sheds, etc. The architects are Messrs. Joseph & Smithe n.

Near Kennington Oval are unmistakable signs of progress in the provision of housing accommodation for those with limited incomes but with the desire for pleasant surroundings. We are greeted by a group of houses of yellow brick, with green doors and polished brass fittings, all looking neat and new, but promising to wear well to the last. It is effective "town planning," and owes its character to the forethought of Professor S D. Adshead, F.R.I.B.A., and Mr. S. C. Ramsey, A.R.I.B.A., acting for the Duchy of Cornwall Estate. There are cottages and flats, with spacious precincts, and a quadrangle formed by houses for old people, the accommodation comprising living-room, with bed recess, bedroom, scullery, and larder. Near by will be the Church of St. Anselm, of which the Prince of Wales laid the foundation-stone this year. Professor Adshead and Mr. Ramsey are the architects, and the builders are Messrs. L. H. & R. Roberts.

New Hospitals in South London.

There is a possibility of the new Westminster Hospital being established on the north side of Clapham Common, in the place of some old houses which at present lend dignity to the quarter known as the Old Town. In any case these old buildings, of Wren's time, are doomed probably; but whether the hospital is destined to be built there is not settled.

On the other side of Clapham Common, however, a hospital is actually being erected. This is the South London Hospital for Women, and is being built on the Holland House Estate by Mr. William Downs from designs by Mr. M. E. Collins, F.R.I.B.A. The hospital will be staffed entirely by women, and will possess an electricity and X-ray department.

Extensions are in progress to the Clapham Maternity Hospital in Jeffreys-road, the architects being Messrs. Hart & Waterhouse. Messrs. Chessum & Sons are its general contractors

The Hospital for Diseases of the Skin, Stamford-street, will be removed in due course to a corner building in Blackfriars-road and Great Charlotte-street. The site has been cleared, and the plans are being prepared by Mr. William A. Pite, F.R.I.B.A.

The biggest new hospital in South London is the King's College Hospital in Bessemer-road and Denmark-hill, Camberwell, and Mr. Pite's drawings have been illustrated from time to time in the *Builder*. Although a large part of the building is in occupation, the contractors, Messrs. Foster & Dicksee, are still at work, and much remains to be done before the structure is finally complete.

On the other side of Denmark-hill another hospital is being built, the work of the contractors, Messrs. Holliday & Greenwood, Ltd, being at present in the early stages. The building will be known as the Maudsley Hospital for the Mentally Defective, and it owes its origin to the gift of £30,000 from Dr. Henry Maudsley. The work is proceeding under the direction of Mr. W. C. Clifford Smith, M.Inst.C.E., Engineer to the Asylums Committee of the London County Council. There will be accommodation for one hundred beds, with outpatients' department and a school for medical students.

In addition to these permanent buildings temporary hospitals are in course of erection in the London district to meet the needs of the wounded in the war. For example, such structures are being built on Wandsworth Common by Messrs. Higgs & Hill, Ltd.

Miscellaneous Work.

In the Westminster Bridge-road, at the corner of Lambeth Palace-road, a site has been cleared for a block of shops, offices, etc., designed by Mr. Richard J. Lovell. The Wesleyan Methodist Church in the Lambeth-road is being completely renovated inside and outside under the care of Messrs. Gordon & Gunton, with Messrs. Somerford & Son as general contractors. At Nos. 129-133 a site is being cleared for engineering works for Messrs. W. Mackie & Co., electric light and power contractors; the architects are Messrs. Newman & Newman, the builder is Mr. Henry Kent, and the steelwork will be by Messrs. Redpath, Brown, & Co., Ltd. In Vauxhall-walk a large block of stables, etc, is being completed from designs by Messrs. Bur on & De Bertod no; Messrs. John G eenwoo l, Ltd., are the general contractors, and Messrs Smith, Walker, & Co. the steel engineers. Mr. C. A. Aish, Licenti te R.I.B.A., has prepared plans for a cinema theatre in the Kennington Park-road. Shops and houses are being built in the Brixton-road and Acre-lane by Messrs. Chessum & Sons, the architects being Messrs. Boreham, Son, & Gladding. In Avondale-square, Camberwell, a church hall in connection with the Church of St. Philip the Evangelist is being built by Messrs. Falkner & Sons from the design of Mr. H. P. Burke Downing, F.R.I.B.A.

One of the most important structures to be erected in South London is the new Sessions House, Newington-causeway, illustrated in the *Builder*, July 24, 1914. The tender of Messrs. W. E. Blake & Co. amounted to £98,980. The new building will be built from designs by Mr. W. E. Riley, F.R.I.B.A., Superintending Architect to the London County Council; and we may mention here that throughout this series of articles no reference has been made to the new schools or reconstructions being carried out under the same authority. This schoolwork is in progress the length and breadth of London, and, without consulting official figures, it is obvious that there is a current expenditure of some hundreds of thousands of pounds. A new departure in this sphere is the competition for new schools at Battersea and Greenwich. The London County Council appointed Mr. John W. Simpson, F.R.I.B.A., assessor, and designs were due to be sent in on or before September 7.

* Continued from page 276.

COST ACCOUNTING ON CONSTRUCTION WORK.*

SECTION III.

The Timekeeping.

A. The Field Sheet.

ON the job the timekeeper is supplied with what we call a "field sheet," an example of which is shown in Figs. 7 and 8. This field sheet is, we believe, an innovation in timekeeping. A fresh sheet or sheets is used every day and is carried around by the timekeeper on the job. In the left-hand column he enters the numbers of all the men who are at work, and it will be noticed that the tenth line is a heavy line and that numbers ten, twenty, thirty, and so on appear on these heavy lines always, and, if necessary, blanks are left in between to ensure this being done. (The object of this will be explained later.) After having checked the men in, in the second column from the left, the timekeeper starts on his rounds, and in the column headed 7 to 8 he places against each man's number the code word for the work he is doing. On making his second round, which is usually about ten o'clock, if the man is still on the same work he simply places a check in the intervening columns to show that the same work is going on. The timekeeper has to make at least four rounds every day, and has to find each man on every round. If a man is not found, his pay is docked unless he can satisfactorily explain where he was.

It will be noted that the field sheet provides columns for checking the men in after the noon hour and for checking the men out at night and for overtime. The last column is the total number of hours worked during the day, which is used in making up the pay roll, as will be shown later.

In going his rounds the timekeeper carries the field sheet in a stiff binder similar to that used by the express companies. On a large job sometimes as many as six or eight sheets are used every day. They are, of course, all numbered up with the numbers of the men before he starts on his rounds. The advantages of this field sheet are as follows:—

1. The timekeeper keeps a permanent record of what the men are doing every hour in the day. This is an improvement on the old method, when timekeepers used to take the time on old pieces of scrap paper, backs of envelopes, or pieces of old board, and kept no permanent record of the work in any form. In that way men were frequently missed and their time afterwards guessed at, and there was no check on the men that showed they were all at work.

2. The superintendent can easily check the work of a timekeeper. Most of our superintendents, each time that they go out on to the work, make a note of the numbers of three or four of the men and note what they are doing at that time, and on coming in refer to the timekeeper's field sheet to see what work he has entered them as being on, and by picking out at random a few men every day in this way it is easy to find out whether the timekeeper is doing his work correctly.

3. It is easy to disprove men's claims for more time than they are allowed, as in addition to the record on the pay roll we have this actual check on what the men were doing hour by hour, and a man who claims his time is short is confronted with the field sheet, which shows exactly what he has been doing.

4. On a large job two men can work together on the timekeeping, for on a job where the pay roll is as much as four thousand dollars a week it is all one man can do to go round the work and note the men's time. He turns in his field sheet to an assistant timekeeper, who makes out the pay roll and time sheets from it. Under

* Continued from page 277.

ABERTHAW CONSTRUCTION COMPANY, BOSTON

TIMEKEEPER'S FIELD SHEET

Fig 7

ABERTHAW CONSTRUCTION COMPANY, BOSTON

TIMEKEEPER'S FIELD SHEET

Fig 8

the old methods, when rough notes were made on scrap paper, this would be a very difficult if not an impossible thing to get done correctly, and the result would be that the timekeeper's field work would suffer and the cost accounts would be inaccurate.

There are necessary limits to the number of subdivisions made in the work. Some timekeepers with more zeal than discretion will multiply subdivisions without end if not watched. It is a standing instruction to our men that the labourer who shakes out and bundles cement bags is to be charged to the largest concrete item of the day, and that the saw filer is to be reported on the largest piece of form work. All time on temporary dams for construction joints in concrete floors are reported with floors. The superintendent, time-

ABERTHAW CONSTRUCTION COMPANY, BOSTON

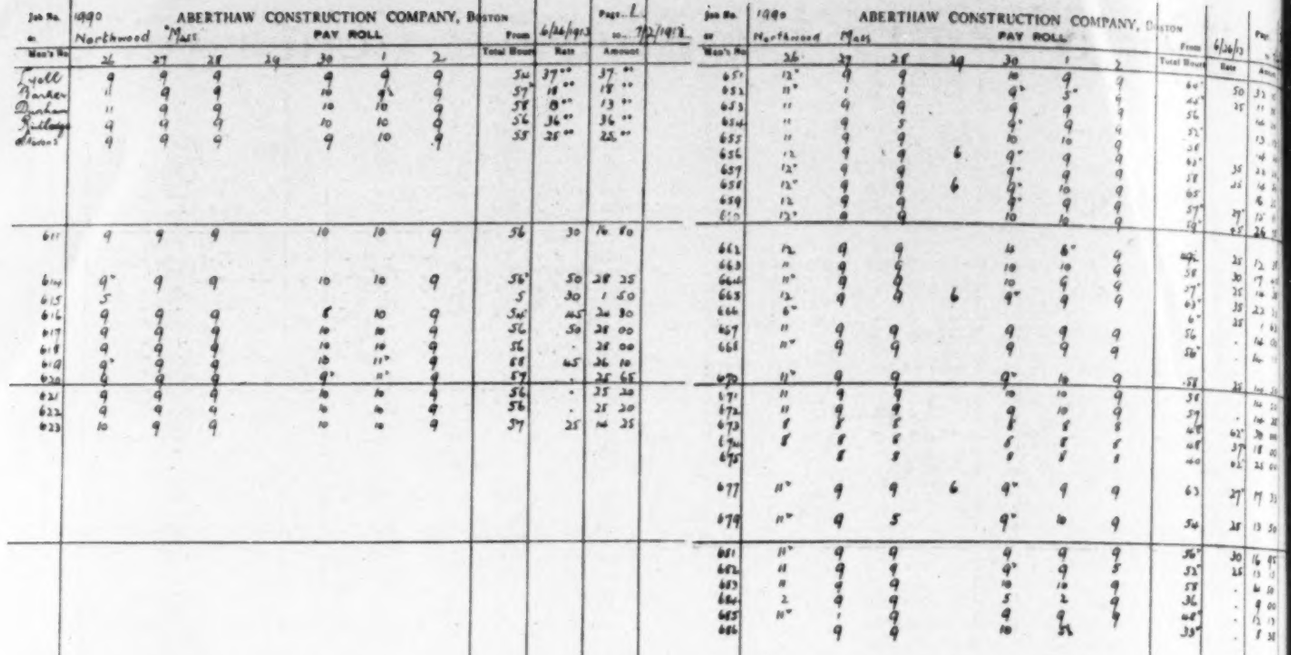
DAILY TIME SHEET

Fig 9

ABERTHAW CONSTRUCTION COMPANY, BOSTON

DAILY TIME SHEET

Fig 10



keeper, and water-boy are not so charged, but are prorated on every item, as will be seen in sect. *A*.

B. The Time Sheet.

Figs. 9 and 10 show the daily time sheet. In this it will be noted that the ruling is the same as on the field sheet, with every tenth line reserved for numbers 10, 20, 30, and so on, so that the men's numbers appear always on exactly the same line on each sheet. In the left-hand column are the numbers of the men, and on the top of the succeeding column are written the code words of the work in progress. Under these is entered against every man the number of hours he has spent on the section of the work denoted, and on the right-hand side is a column for the man's rate. The next two columns are headed "For Office Use," and when the sheets come into the office the total amount spent on each subdivision of the work is worked up and entered there, as is shown in the example. The extreme right-hand column is reserved for the report of the quantities of the work done, which are entered by the time-keeper every day, or, in some cases where the work is unfinished at the end of the day, every second or third day.

These sheets are entered up by the time-keeper on the job, sometimes in the evening after the day's work is done, but usually in the morning following the day in which the work was done. They are mailed to the office daily.

C. The Pay Roll.

Figs. 11 and 12 show the pay roll, which is also ruled up in sets of ten lines, like the field sheet and the time sheet. This is similar to all contractors' pay rolls and needs no comment, except to point out the immense saving of time that has been made by the use of time sheets, field sheets, and pay rolls, all ruled uniformly, and insisting on leaving blank spaces rather than using every line on the time sheets and pay roll. The pay roll is filled in simply by placing the field sheet over the pay roll, and transferring the number of hours' work without even referring to the men's number. The pay roll is then checked by the time sheet, so that there is a circular check on the whole of the operation.

D. The Quantity Report.

This has already been referred to when considering the time sheet. It is, of course, of vital importance that the quantities should be accurately reported. We make it the duty of the engineer-in-charge of the level and transit to compute the quantity of work done each day and turn it in to the timekeeper to enter in the column provided. It is often a difficult matter to ensure correct reports being received on the quantities of work done, and at the time the system was installed the writer made a practice of visiting jobs monthly and making a rough survey of them whereby he could calculate from his original estimate the quantity of work done, and using this as a check. The practice on our work has improved a good deal since then, and it is very seldom necessary now to make this check, but it is one that should not be neglected by any one starting on a cost-accounting system, as without this check the cost accounts may be rendered worthless by quantities either in excess or less than the actual amounts being reported. On one job, some years back, we found that a superintendent had reported 20,000 sq. ft. more forms than he had put up, with a view to making his costs look low and getting credit for economical work. Our estimates show what the total quantities should be, and an occasional survey and a final comparison will prevent any such errors being made now.

In concrete work the only item of labour that can be checked from the bills is the steel reinforcement, and every other quantity has to be obtained by scaling and computation. This is also true in most other branches of construction work, with the exception of structural steel.

E. The Inquiry Form.

We also use a brief standard form in case of any apparent mistakes on any of the reports received from the field. Often a man's rate is entered wrongly, or a different number of hours appears on the pay roll to that on the time sheet, or time is reported with no quantities or quantities with no time. It is only by picking up all these mistakes at once and having them corrected that a system is kept going properly, and the men in the field, knowing that their work is carefully watched, are more keen in getting work done accurately. This may seem to be a trivial detail, but the writer's experience is that it is not possible to get accurate and careful work from men in the field unless careful attention is paid to the smallest items, and any inaccuracies or omissions are promptly followed up. If the men on the job are made to realise that their work is important and really counts for something they will be a good deal more careful and eager to co-operate with the office in matters like this.

(To be continued.)

PROPOSED NEW BUILDINGS AND OTHER WORKS.*

In these lists care is taken to ensure the accuracy of the information given, but it may occasionally happen that, owing to building owners taking the responsibility of commencing work before plans are finally approved by the local authorities, "proposed" works, at the time of publication, have been actually commenced. Abbreviations:—T.C. for Town Council; U.D.C. for Urban District Council; R.D.C. for Rural District Council; E.C. for Education Committee; L.G.B. for Local Government Board; B.G. for Board of Guardians; L.C.C. for London County Council; B.C. for Borough Council; and P.C. for Parish Council.

ABERYSTWYTH.—The L.G.B. have sanctioned the borrowing of £1,963 and £1,197 for the proposed new works of water supply at Borth by the R.D.C.

Acton.—A building society is arranging to commence building operations on an estate of 16½ acres in Victoria-road, in close proximity to the Great Western Engineering Works, and on the tram route between Acton and Harlesden. The area is sufficient for some 280 cottages, in addition to open spaces for playgrounds for the tenants' children, and a green for recreations for the adults. The estate and house plans are on up-to-date Garden City lines.

Arbroath.—The T.C. have decided to carry out improvements at an estimated cost of £850.

Banbury.—Plans passed by R.D.C.:—Alterations and additions and new drainage to Hill Farm, South Newington, for Mr. G. A. Leadley Brown, and for additions to cottage, Cropredy Fields, for Mrs. Grisold, of Cropredy.

Barnsley.—Plans passed:—Mr. John Mellor, additions to house off West-road, Pogmoor; Mr. F. Carr, additions to house, 109, Shaw-lane; Mr. J. H. Taylor, wheelwrights' and blacksmiths' shops, Foundry-street; Mr. W. G. England, three dwelling houses, Prince Arthur-street.

Bedford.—Sanction has been given to the R.D.C. borrowing £1,100 for the Roxton housing scheme.

Bexhill.—Plans passed:—Five houses at Cooden, submitted by Messrs. Tubbs, Messer, &

* See also our list of Competitions, Contracts, etc., on page 305.

RATES OF WAGES IN THE BUILDING TRADE.

THE following are the present rates of wages in the Building Trade in the principal towns of England and Wales. It must be understood that, while every endeavour is made to ensure accuracy, we cannot be responsible for errors that *may* occur:—

——	Masons.	Bricklayers.	Carpenters, Joiners.	Plasterers.	Slaters.	Plumbers.	Painters.	Masons' Labourers.	Bricklayers' Labourers.	Plasterers' Labourers.
	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.
Aberdare	9	—	9	9	—	9	7½	6½	6½	6½
Accrington	9½	9½	9	9	9	9	8½	6½	6½	6½
Altrincham	9½	10	10½	10	8½	10	9	6½	6½	6½
Ashton-under-Lyne	10½	10½	10	10½	9	10	9	6	6	6
Barnsley	9½	9½	9½	9½	9	8½	8	7	7	7
Barrow-in-Furness	9½	10	9½	9½	9½	9½	9½	7	7	7
Barry	9½	9½	9½	10	—	9	8½	6	6	6
Bath	8½	8½	8½	8	7½	7½	7½	5½	5½	5½
Bedford	8	7½	7½	8½	—	8	6½	5	5	5
Birkenhead	11	11	11	11½	11	11	9½	7	7	7
Birmingham	10	10	10	10½	9	10½	9	7	7	7
Bishop Auckland	9	9	9	9	10	9	7½	6	6	6½
Blackburn	10	10½	10	9½	9½	9½	9½	6½	7	7
Blackpool	10½	9½	9½	9½	8½	9	8½	8	6	6
Bolton	10	10½	10	10½	9½	10	9½	6–7	6–7	6–7
Bournemouth	8½	8½	8½	8½	8½	8½	8	6	6	6
Bradford	10	10	9	9½	9½	10	8½	7	7	7
Bridgwater	6½	6½	6½	6½	6½	6½	6	4	4	4
Brighton	8–9	8½	8½	8½	—	—	7	6	6	6
Bristol	10	10	10	10	—	10	9½	7	7	7
Burnley	9½	9½	9½	9½	8	9	9½	6½	6½	6½
Burton-on-Trent	9	9	9	9	8½	9	8½	6	6	6
Bury	10½	10½	10	9	9½	10	9	6	6	6
Cambridge	9	8½	8½	9	9	9	7	5½	5½	5½
Canterbury	8½	8	8	10	—	8½	6½	5	5	5
Cardiff	9½	9½	9½	9½	9½	9½	8½	6½	6½	6½
Chatham	8	9	9	9	9	9	7	6	6	6
Chelmsford	8	7½	8	9	—	7½	6½	5	5	5½
Cheltenham	8½	8½	8½	8½	—	8½	8	5½	5½	5½
Chester	9½	10	9½	9½	9½	9½	8½	5½	6½ 6½	5–5½
Chesterfield	8½	9	8	8	9	8½	7½	5½	5½	5½
Colchester	8	8½	8½	9	8	9	6	5½	5½	5½
Coventry	9½	9½	9½	9½	9½	9½	8½	6½	6½	7
Crewe	7	8	7½	9	8	7½–8	7½	5	5½	6
Darlington	9½	9½	9	9½	10	9	8½	6½	6½	6½
Derby	9½	9½	9	9	9	9	8	6½	6½	7
Doncaster	9½	9½	9	9	8½	9	8	6½	6½	8½
Dudley	8½	8½	8½	8½	8½	8	7½	5½	5½	5½
Durham	9	9	9	9	9½	9	8	6	6	8½
East Glamorgan and Monmouthshire Valleys	9	9	9	9	—	—	8	6½	6½	6½ 7½
Exeter	8	8½	8	8	7½	7½	7	5½	5½	5½
Folkestone	8½	8½	8½	9	8½	8½	7–7½	6½	6½	6½
Gloucester	8	8½	8½	8	8	8½	8	6	6	6
Grantham	8	8	7½	7½–8	7½–8	7	6½	5	5	5
Grays	—	10	10	—	—	9½	8½	7	7	7
Grimsby	9	9	9	9	9	8	8½	7	7	7
Great Yarmouth	7½	7½	7½	—	7½	7½	6	4½	4½	—
Halifax	9½	9½	9	9	8½	9	8½	6½	6½	6½
Harrogate	9½	9	9	9	8	9	8½	6½	6½	6½
Hartlepools	9	10	9½	10	10	10	9	7	7	7½
Hastings	8½	8	8	8½	8	8	7	6½	5½	5½–6
Hereford	8	8	7½	8½	8	7	6½	5½	5½	5½
Huddersfield	9½	9½	9	9	10	9	8½	6½	6½	6½
Hull	10½	10	10	10	10	9½	8½	7½	7½	7½
Ipswich	8½	8½	8½	9	8½	8½	7	5½	5½	5½
Lancaster	10	10	9	9	9	9	9	5½	6	6
Leamington Spa	9	9	9	8½	8½	8½	7½	6	6	6
Leeds	10	10	10	10	9	9½	8	7	7	7
Leicester	9½	9½	10	10½	9½	9½	9	7	7	7½
Lincoln	9	8½	8½	9	8	8½	8	6	5½	6
Liverpool	11	11	11	11	10½	11	9½	6½	7	7
Llanelly	9½	9½	8½	8½	9	8½	8	5½	5½	5½
London	11½	11½	11½	11½	—	1s.	9	8	8	8
Loughborough	9	8½	8½	9	9	8½	7½	5½	5½	5½
Luton	9½	8½	8½	8½	9	8½	7½	5½	5½	5½
Maidstone	9	9	9	9	9	9	8	6	6	6
Manchester	10	10½	10½	11	10	10	9½	6½	6½	7½
Mansfield	8½	9	8½	8½	—	8½	8	6	6	—
Merthyr Tydfil	9½	9½	9½	9½	8½	8	8	6½	6½	6½
Middlesbrough	9	10	9½	10	10	10	8½	7	7	7½
Newcastle-on-Tyne	10	10	10	10	10	10	9	6½	6½	6½
Newport, Mon.	9½	9½	9½	9½	8½	9½	8½	6½	6½	6½
Northampton	9	9	9	9	8½	9	8	6	6	6
Norwich	8	8½	8½	8½	8	8½	7	5½	5½	5½
Nottingham	10	10	10	10½	9½	10	9	7	7	7½
Oldham	10½	10½	10	10	9	10	9½	7	7	7½
Oxford	9	8½	8½	8½	8	8½	7½	6	6	6
Plymouth	9	9	9	9	9	9	7½	6	6	6
Pontypridd	9	9	8½	9	9	9	8	6½	6½	6½
Portsmouth	9½	9½	9½	9½	—	8½	7½	7	7	7
Preston	10½	10½	10	9½	9	10	9½	5½	6	6½
Reading	8½	9	9	9½	—	9	7½	6	6	6
Rochdale	10	10½	10	9½	8½	9½	9	6½	6½	7
Rochester	8	9	9	9	9	8½	7	6	6	6
Rugby	8½	8½	8½	8½	8	9½	8½	5½	5½	5½
St. Albans	9	9	9	9–10	9	9–10	8	6½	6	6½
St. Helens	9	9½	10	9½	9½	9½	9½	6	6	6
Scarborough	8½	9	8½	8½	8	9½	7½	6½	6½	6½
Sheffield	10½	9½	9½	9½	9½	9½	8½	6½	6½	6½
Shrewsbury	8½	8½	8½	8½	—	8½	7	5½	5½	5½
Southampton	8½	9½	9½	8	—	9½	8½	6½	6½	6½
Southend-on-Sea	9	9	9	9	P'cework	9	7	6	6	6
Southport	10	9½	9½	9½	9½	9½	9½	6	6	6
South Shields	10	10	10	10	10	8½	9	6½	6½	6½
Stockport	10½	10	10	10½	9	10	8½	6	6½–7	7½
Stockton-on-Tees	9	10	9½	10	10	10	9	7	7	7½
Stoke-on-Trent	9	9½	9	9	—	8½	8½	6	6	—
Stroud	7½	7½	7½	7½	7½	7½	7	5	5	5
Sunderland	10	10	10	10	9½	9	9	6½	6½	7
Swansea	9	9	9	9	8½	9	8½	6	6	6
Taunton	7	7	7	7	—	8	6½	4½	4½	4½
Wakefield	9½	9½	8½	9½	8½	9	8	7	7	7
Walsall	9	8½	9	8½	8½	8½	7½	6½	5½	6½
Warrington	8½	9½	9½	10	8½	9½	8½	5½–6	6	6–6½
West Bromwich	9½	9½	9½	9½	—	8½	7½	6½	6½	6½
Wigan	10	10½	9½	9½	9	9½	9½	7	7	7
Windsor	9	9	9	10	—	9	—	6	6	8
Wolverhampton	9½	9½	9½	10	8	10	8	6½	6½	6½
Worcester	8½	9	9	8½	8½	8½	7½	6	6	6
York	9½	9½	9	9½	9½	8½	8	6½	6½	6½

The mason's rate given is for bankers; fixers usually ½d. per hour extra.

Poulter, for Earl De La Warr; a lodge and slaughter-house near Freeseland, Mr. J. E. Maynard (Mr. F. J. Offen); detached house, Meadsroad, Mr. G. H. Gray (Messrs. L. & M. M. Norris); shop, 56, Devonshire-road, Mr. G. H. Gray (Mr. R. Robson); detached house, Crescent-drive, Little Common, Mr. J. B. Wall (Mr. W. G. Harris); pair of semi-detached houses, Mr. J. E. Maynard (Mr. H. B Farnfield).

Billinge.—Plans of two houses for Messrs. Houghton & Wilson at Upholland have been approved.

Bournemouth.—The sanction of the L.G.B. has been received to the borrowing by the T.C. of the sum of £5,400 for additions and improvements to the Malmesbury Park Council School and the erection of a new infants' department. The E.C. has instructed the architect to prepare alternative plans for the erection of a new infants' school and the inclusion in the mixed department of the rooms at present used for the infants' department at Pokesdown School.

Brackley.—Plans of a new farmhouse at Sulgrave for Mr. J. Chapman have been passed by the R.D.C.

Cheadle. — Pair of semi-detached houses in Gatley-road for Mr. M. G. Lees.

Chelmsford.—The E.C. have decided to have designs made for two new schools.

Colchester.—A L.G.B. inquiry has been held with reference to an application of the T.C. to borrow £3,110 for the erection of pavilions for the treatment of cases of tuberculosis and of scarlet fever at the Infectious Diseases Hospital, Mile End, and for alterations and additions to the administrative block of the hospital.

Criccieth.—The U.D.C. have provisionally adopted a scheme submitted by Mr. Hancock, of the Welsh Housing Association, and approved by the L.G.B., for the erection of eleven workmen's dwellings on the field known as Cae Llathan.

Derby.—The T.C. have resolved that application be made to the L.G.B. for sanction to the borrowing of the sum of £5,000 for the construction of a lake, with banks, and laying-out walks, etc., at the London-road Recreation Ground.

Dewsbury.—A L.G.B. enquiry has been held into an application by the Corporation to borrow £24,147 for the provision of working-class dwellings on a site known as Borough Park, near to Crow Nest Park.

Dover.—The T.C. are applying to the L.G.B. for a loan of £30,000 for the erection of the new cottages for workmen in the pier district.

Eton.—The R.D.C. have approved of plans for a new house in Green-lane, Burnham, for Miss Burn; and alterations to Sheepcote Farm, Hitcham, for Miss Aird.

Evesham.—Mr. H. E. Dicks, Evesham, has been appointed architect to the scheme for the erection of fifty-two cottages for the T.C. Plans passed:—Three dwelling-houses in Princess-road and six dwelling-houses in Lime-street, for Messrs. Espley & Co., Ltd.; and for sheds near Northwick-road, for Mr. John Knox.

Feckenham.—The L.G.B. has sanctioned the R.D.C. borrowing £2,230 for a building scheme at Astwood Bank.

Flint.—Plans passed:—House, Chester-road, Mr. T. Bennett; extension of house, Mr. Evans, Waen Isa.

Fylde.—Farm outbuildings at Whinney Heys, Hardhorn; two cottages on Balham-road, Westley, for Mr. J. T. Clifton.

Glamorganshire.—The C.C. have decided to make application to the L.G.B. for sanction to borrow the following sums, among others, in respect of new schools:—Glyncorrwg mixed school, £4,400; Tairgwaith mixed school, £5,482; Clydach boys' school, £6,565; Llansamlet mixed and infants' school, £8,100; Garnswllt temporary school, £400; Brynoethin mixed and infants' school, £4,140; Nantymoel school additions, £900; Gowerton school additions, £900; Pontyrhyl remodelling, £630; Penybont improvements, £1,220; Trebanos, adaptation of rooms for handicraft and cookery centre, £250.

Guisborough.—A plan, per Mr. Crossley, for a caretaker's house for the Trustees of the Commondale Wesleyan Chapel has been approved by the R.D.C.

Harrogate.—Plans passed:—Mr. C. A. Nettleton, fourteen houses in Burke-street; Trustees of Messrs. Turner, alterations to 24, Montpelier-parade.

Holyhead.—The U.D.C. has approved of a plan for a motor garage at Blackbridge, for the London and North-Western Railway Company.

Keighley.—Plans passed:—Mr. Harold Wade, six houses, Spring-grove; Trustees of Knowle Park Congregational Chapel, additions to chapel, Hive-street; Messrs. J. H. Binns & Co., Ltd., chimney Luton-street; and Mr. Charles Macauley; three houses, Woodhouse-road.

Lytham.—The new parish hall proposed to be erected near to St. Cuthbert's Church, on the site of the plantation between the church and the cricket field, is estimated to cost £2,500. Mr. Clifton has given the site of 1,500 sq. yds.

Macclesfield.—Plans passed:—House in Barracks-lane, deposited by Mr. A. Green; five houses in Ryle-street, deposited by Messrs. Cooper Bros.

Margate.—The T.C. have passed plans for two houses in Cornwall-gardens, for Mr. C. E. Doughty; and five in Ulster-road, for Mr. H. Goodban.

Midsomer Norton.—Plans passed for farmstead at Millard's Hill, Welton, on the Duchy of Cornwall estate, for Mr. James Stevens; and for two houses in Smallcombe-road, Clandown, for Mr. W. Chedgy.

Meriden.—Plans passed by R.D.C.:—Rearrangement of engineer's office, Tyburn, for the Birmingham Drainage Board; restoration of grand stand, Castle Bromwich, for the Birmingham Racecourse Co.; garage for Mr. G. W. Wynne, Bickenhill; additions and alterations to Fillongley Lodge, for Mr. J. Caddick-Adams.

Newcastle-on-Tyne.—The Young Women's Christian Association have decided to extend and remodel their premises from designs by Mr. Plummer, architect, and have accepted a tender of Mr. S. Miller, Newcastle, for the work.

Newcastle-under-Lyme.—The L.G.B. has sanctioned the B.G. purchasing land for a receiving home for children, and Mr. Snape, architect, has been instructed to prepare sketch plans of the building.

Nuneaton.—Plans passed:—Alterations to shop, 39, Abbey-street, for Mr. Alfred Green; five houses, Croft-road, for Mrs. T. Petty; six houses, Arthur-street, for Messrs. Geo. Smith & Sons; motor-house, Lutterworth-road, for Mr. J. H Parker.

Orrell.—Plans passed by U.D.C.:—House and shop in Church-street, for Mr. R. Barton; eight houses in Park-road, for Orrell Building Company; four houses adjoining Claremont, City-road, and washhouse, etc., at Claremont, for Mrs. King.

Rhyl.—The L.G.B. have sanctioned the borrowing by the T.C. of £3,777 for dredging works, £231 for pumping-station buildings, and £168 for new sewerage machinery. The Council have also forwarded to the L.G.B. a scheme for a new amphitheatre, to cost £4,000, and are now considering plans for the new pier scheme and the laying out of a portion of the sea front in marine gardens.

Richmond (Surrey).—Plans passed:—Mr. W. A. Robinson, addition to No. 4, Maid of Honor-row; Messrs. R. Cowper & Son, addition to No. 126, Queen's-road; Mr. W. Simmons, additions to Midhurst House, Petersham-road; Mr. M. T. Saunders, additions to the Lass public-house, Richmond-hill; Messrs. A. Ladbrook & Son, addition to No. 3, Priory-road; Mr. B. H. Orphoot, additions to the Little Green; Mr. J. Means, addition to No. 5, Hill-street; Mr. E. J. Partridge, detached house, Sudbrook-lane, Petersham.

Scarborough.—The T.C. have agreed to construct a bathing pool on the north sands, near the Bungalow, at a cost not exceeding £10,000. In addition, numerous bathing-boxes and beach bungalows will be erected.

Selby.—The U.D.C. have decided to apply to the L.G.B. for sanction to purchase for £900 2¼ acres of land on the south side of Flaxley-road, as a site for further working-class dwellings.

Skipton.—The R.D.C. have resolved to acquire a site for a small-pox hospital.

Southend.—The T.C. have decided to invite competitive designs from architects within the borough for the erection of working-class dwellings; and from architects generally for a tuberculosis hospital.

Sunderland.—The R.D.C. has made application to the L.G.B. for sanction to purchase 5¼ acres of land at Burdon-lane, Ryhope, from the Ecclesiastical Commissioners at a cost of £2,550 for working-class dwellings. About eighty houses are to be erected, at an average cost of £222 6s. 3d. each.

Swanage.—Plans passed by U.D.C.:—Fifteen cottages at Newton, for Mr. E. Burt; additions to Hillcrest, for Mr. A. C. B. Lloyd; 9-in. sewer, for Burt Trustees, in Bon Accord-road; and two dwelling-houses adjoining electricity works, for Mr. F. W. Pond.

Tilbury.—The L.G.B. have given their sanction to the purchase by the U.D.C. of 77 acres of land in the South Ward for the purpose of the Council's housing scheme, and the provision of park, recreation ground, and allotments, and also giving sanction to the erection of 125 houses.

Upholland.—The L.G.B. have sanctioned the U.D.C. borrowing £1,500 for workmen's dwellings.

Upper Renfrewshire.—Plans passed:—Double cottage in Wedderlea-drive, Cardonald, for Mr. David Paul, Magdala, Cardonald; office block at Elderslie Graving Dock, Yoker, for Messrs. Barclay, Curle, & Co., Clydeholm Shipbuilding Yard, Whiteinch; cottage in Linwood-road, Elderslie, for Mr. David Donaldson, Linwood; two-terrace houses in Glenville-avenue, Giffnock, for Messrs. George Dixon & Son, Giffnock; building at the Cat and Dog Home, Corkerhill, for the Committee; addition to Lounsdale House, Paisley, for Mr. Charles F. Shanks, Paisley; cottage at Haugh Farm, Eastwood, for Sir John Stirling-Maxwell, Bart., of Pollok; and laboratory at the Paisley Foundry, Abbotsinch, for Messrs. Bow, M'Lachlan, & Co., Ltd.

Woking.—A L.G.B. inquiry has been held into the application of the U.D.C. to borrow £5,800 for housing. It is proposed to erect twelve pairs of cottages at the outset, on a site at the back of Poundfield House, Old Woking, which has an area of 6 acres 2 roods 17 poles, and the unoccupied portion of which is to be utilised for allotments.

Wrexham.—The L.G.B. have inquired into the application of the T.C. to borrow £1,207 for works of sewerage and surface-water drainage (Yorke-street and Mount-street), and £1,660 for the purchase of land from Sir Foster Cunliffe for building houses for the working classes in Holt-road.

Yarmouth.—The T.C. has decided to construct before next season an immense open-air swimming bath in the beach gardens, with spacious public shelters attached.

York.—The T.C. have decided to erect twenty-eight cottages for tramway men, at an estimated cost of £6,851. A L.G.B. inquiry has been held into an application by the T.C. to borrow £1,625 for the purchase of land and houses in Foss Islands for an extension to the depôt.

A DECEASED BUILDER'S ESTATE.

The late Mr. Thomas Garrett, of Brighton, builder, has left estate to the gross value of £32,614.

WAGES IN THE BUILDING TRADE.

Birmingham.—On and after October 1 an advance in wages will be paid to the carpenters and joiners (10d. to 10½d.), bricklayers (10d. to 10½d.), stonemasons (10d. to 10½d.), and labourers (7d. to 7½d.).

Great Yarmouth.—An advance in wages of ½d. per hour has been granted to all trades in this district as from October 1. The present rates are as follows:—Stonemasons, bricklayers, carpenters and joiners, slaters, and plumbers, 7½d. per hour; painters, 6d. per hour; and labourers, 4½d. per hour.

Nottingham.—An advance in wages of ½d. per hour (7d. to 7½d.) will be paid to the masons' labourers and bricklayers' labourers on and after October 1.

Nuneaton.—Advances in wages of ½d. per hour have been granted to the bricklayers and labourers in this district as from October 1. The present rate for bricklayers is 8½d. per hour, and for labourers 6½d. per hour.

GENERAL BUILDING NEWS.

ST. LUKE'S, OLD-STREET, E.C.

The church of St. Luke, Old-street, E.C., has just been underpinned and the east wall restored. The architect was Mr. F. S. Hammond, Barbican, E.C., and the general contractors, Messrs. Dove Brothers, Ltd., Cloudesley-place, Islington, N.

CHURCH, LAMBETH-ROAD, S.E.

Extensive work is in progress in connection with the renovation and partial rebuilding of the Wesleyan Methodist Church, Lambeth-road, S.E. The architects are Messrs. Gordon & Gunton, Finsbury House, Blomfield-street, E.C., and the general contractors are Messrs. Henry Somerford & Son, Manor-street, Clapham, S.W.

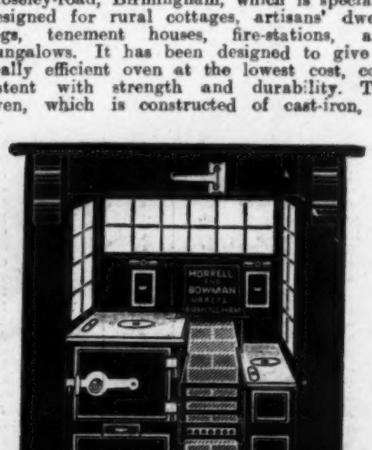
PRINTING WORKS, LONG-ACRE.

Extensions are being made to the premises of Messrs. Hazell, Watson, & Viney, Ltd., by the inclusion of No. 53, Long-acre, W.C. The architect for the work is Mr. W. E. Hazell, F.R.I.B.A., Tavistock-square, W.C., and the general contractors are Messrs. L. & W. Whitehead, Ltd., Portland Works, Clapham-road, S.W.

TRADE NEWS.

Under the direction of Mr. Charles H. Brightiff, architect, 13, Portland-terrace, Southampton, the "Boyle" system of ventilation (natural), embracing Boyle's latest patent "air-pump" ventilators and air inlets, has been applied to Hythe Congregational Church.

We give an illustration of the "open fire" range manufactured by Messrs. Horrell & Bowman, range and grate makers, of 508-10, Moseley-road, Birmingham, which is specially designed for rural cottages, artisans' dwellings, tenement houses, fire-stations, and bungalows. It has been designed to give a really efficient oven at the lowest cost, consistent with strength and durability. The oven, which is constructed of cast-iron, is



heated very quickly from the open fire, which is small, and being near the floor gives good heat into the room. When fitted with a special H.P. boiler the range is very efficient for producing hot water, and will heat 50 gallons per hour with a normal fire, which is a very inexpensive way of heating bath water if connected with the firm's single-tank system. The flues are easily cleaned, and the general working of the range is simple. The depth of opening required is 21 in. with boiler and 18 in. without.

Any British manufacturer wishing to obtain information in order to find outlets in Belgium for goods to replace German articles can obtain free particulars as to names of firms, duties, etc., from Emile Pauwaert, Ghent, Belgium. Catalogues or samples received will be distributed amongst interested parties. Belgian addresses of exporting firms will also be supplied.

Twenty-three of the employees of Messrs. Samuel Haskins & Bros., Ltd., shop fitters, of Old-street, have either joined Lord Kitchener's Army or the Territorials. Mr. S. Charles Haskins has for a long time held a commission in the 19th County of London, and is at the present time stationed at Hatfield; he hopes before long to be sent to Egypt. Mr. L. J. Haskins has joined the Artists' Rifles.

Cirencester has taken delivery of a Merryweather Hatfield motor fire-engine of the new light brigade type. This engine will be called upon to serve the surrounding district, in addition to the town of Cirencester, and preliminary trials have taken place at Fairford, Bibury, and other places, with satisfactory results. Following the runs into the country, a demonstration of the engine's pumping capabilities took place at Cirencester, when a 1-in. jet was thrown over the church tower. Mr. T. Hibbert, the Town Surveyor and captain of the fire brigade, superintended the operations, which were watched by members of the Urban District Council. A 35-b.h.p. four-cylinder engine is employed, and the pump is capable of delivering 250 gallons per minute at high pressure.

Kilmarnock Infirmary extensions are being supplied with Shorland's double-fronted warm-air ventilating patent Manchester hospital stoves with descending smoke flues, by Messrs. E. H. Shorland & Brother, Ltd., of Failsworth, Manchester.

The swimming-baths at Kirkham (Lancs) are to be treated with Pudlo.

We are informed that all the shares of the Ronuk (Floor Polish) Company are entirely British; the Board and the whole of the staff are British subjects.

UNEMPLOYMENT.

The following Board of Trade announcement has been issued:—In the trades compulsorily insured against unemployment (viz., building, works of construction, engineering, vehicle-making, etc.) the percentage of unemployment at September 4 was 6·24. This is practically the same as the percentage a week before (6·20), and compares with a percentage of 3·34 a year ago. The growth of unemployment in the insured trades has, therefore, for the moment stopped. Indeed, in engineering, construction of vehicles, and saw-milling there is an actual decline of unemployment. This is counterbalanced by a slight seasonal increase of unemployment in building and construction of works. The present unemployment percentage of 6·24 is well below the estimated average unemployment of the insured trades over a period of good and bad years.

RUBBER FLOORING FOR INFIRMARY, EDINBURGH.

We have received particulars relating to the rubber flooring presented on behalf of the Rubber Growers' Association to the Royal Infirmary, Edinburgh, recently, by Mr. William Greenhill, C.A. The flooring, which covers the whole of the main right and left wing corridors and entrance halls of the infirmary, measures over 800 sq. yds., and has been manufactured by the North British Rubber Company, Ltd., Castle Mills, Edinburgh. The pattern is in black and white from designs prepared by Mr Frank Ed. B. Blanc, architect, Rutland-square, Edinburgh. In the right and left corridors, which each extend for almost 215 ft., are large black and white squares, suggestive of marble tesselated paving. In the entrance hall some artistic effects have been obtained. In the main hall, the infirmary arms, crest, and motto, surrounded by a border of classic design, are shown on a ground of pure white. In addition to the gift to the Edinburgh Royal Infirmary, the Rubber Growers' Association made presentations to Guy's Hospital and the London Children's Hospital. The flooring has in all cases been manufactured from plantation rubber contributed by various companies, and the manufacture and laying has been carried out by the rubber manufacturers.

TIMBER FOR BUILDING.

In the last Parliamentary Papers issued Mr. Cowan asked the President of the Board of Trade whether his attention had been called to the injurious effect on the building trade, and consequently on employment, produced by the increase in the price of timber since the outbreak of the war; and whether the Government would take steps to fix maximum prices for such raw materials on a basis similar to that recently adopted in the case of foodstuffs.—Mr. Robertson replied that his attention had been called to the matter referred to. The Board of Trade were fully aware of its importance, and were considering what steps, if any, were possible, and desirable to encourage the supplies of timber for building.

List of Competitions, Contracts, etc.

For some contracts still open, but not included in this List, see previous issues. Those with an asterisk (*) are advertised in this number: Competitions, —; Contracts, iv. vi. viii. x.; Public Appointments, xxvii.; Auction Sales, —. Certain conditions beyond those given in the following information are imposed in some cases, such as: the advertisers do not bind themselves to accept the lowest or any tender; that a fair wages clause shall be observed; that no allowance will be made for tenders; and that deposits are returned on receipt of a bona-fide tender unless stated to the contrary.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

***** It must be understood that the following paragraphs are printed as news, and not as advertisements; and that while every endeavour is made to ensure accuracy, we cannot be responsible for errors that *may* occur.**

Competitions.

OCTOBER 11. — **Rathdrum.** — WATER SUPPLY.—The Rathdrum R.D.C. offer a prize of £50 to the engineer preparing the best scheme for supplying the town of Rathdrum and the workhouse with an adequate supply of water from Ballinderry Brook. Mr. P. W. Sheehan, Clerk of the Council, Board-room, Workhouse, Rathdrum.

OCTOBER 31.—**Adelaide, South Australia.**—LAYING-OUT SHOW GROUNDS.—Premiums, £500, £200, and £100. Secretary, Royal Agricultural and Horticultural Society of South Australia, 23, Waymouth-street, Adelaide, South Australia.

OCTOBER 31.—**St. Helens.**—POLICE BUILDINGS AND FIRE STATION.—The St. Helens C.B. invite competitive designs for the above buildings. Premiums, £100, £50, and £25. See advertisement in our issue of July 10.

JANUARY 15, 1915.—COLLEGE MEMORIAL LECTURE HALL.—Designs for the Alexander Thompson Travelling Studentship must be delivered by the above date. See advertisement in issue of January 30.

MARCH 31, 1915.—**Australia.**—FEDERAL PARLIAMENT HOUSE.—The Government of the Commonwealth of Australia invite designs for the Federal Parliament House at Canberra.

Contracts.

BUILDING AND PAINTING.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

SEPTEMBER 28.—**Birmingham.**—WALL.—Erection of a slag wall in Harborne-road, Harborne. Quantities of Mr. Henry E. Stilgoe, City Engineer, The Council House, Birmingham. Deposit, £1.

SEPTEMBER 28.—**Dublin.**—HOUSE, COTTAGES, ETC.—Erection of a doctor's residence, nurses' quarters, and cottage dwellings at the Sanatorium, Crooksling, Brittas, Co. Dublin, for the Dublin Joint Hospital Board. Specifications of Mr. Thomas F. M'Namara, C.E., architect, 192, Great Brunswick-street, Dublin.

SEPTEMBER 28.—**Shipley.**—HALL.—Erection of a new Town Hall, Kirkgate, Shipley, Yorkshire. Messrs. Anderton & Bailey, architects, Shipley and Keighley.

SEPTEMBER 28.—**Worcester.**—FOOTBRIDGE.—Erection of footbridge over Langham Brook, for the Corporation. Specifications at the City Engineer's Office, Guildhall, Worcester.

SEPTEMBER 29.—**Birkenhead.**—FLOORS.—Laying cement floors at the Union Infirmary. Specification from the Steward of the Infirmary, Derby-road, Tranmere, Birkenhead.

SEPTEMBER 29.—**Derby.**—LIBRARY.—Erection of a Carnegie Branch Library, Pear Tree-road, for the Corporation. Quantities of Mr. C. B. Sherwin, Oakes-chambers, 32, St. Peter's-street, Derby. Deposit, £1 1s.

SEPTEMBER 29.—**Dunshaughlin.**—COTTAGES.—Erection of twenty-five single labourers' cottages, for the R.D.C. Specification (charge 5s.) of Mr. F. Morris, Clerk to the Council, Dunshaughlin.

SEPTEMBER 29.—**Nottingham.**—VERANDAHS.—Erection of four verandahs at fever block No. 2, City Isolation Hospital. Quantities, etc., of Mr. A. Dale, City Architect, Guildhall, Nottingham. Deposit, £2 2s.

SEPTEMBER 29.—**Stockport.**—PAINTING.—External painting, etc., of various buildings at the Portwood Depôt. Specification of Mr. John Atkinson, Borough Surveyor, Town Hall, Stockport.

SEPTEMBER 29.—**Trowbridge.**—ALTERATIONS, ETC.—For alterations and repairs at Crown Farm, Dauntsey, and erection of cowsheds at Keevil, for the Small Holdings Committee of the Wilts C.C. Specification of Mr. J. G. Powell, County Surveyor, Trowbridge.

SEPTEMBER 30.—**Abercynon.**—ALTERATIONS.—For alterations, etc., to the Abercynon Workmen's Hall and Institute. Specification of Messrs. Arthur Ll. Thomas & Gomer S. Morgan, architects, Pontypridd.

SEPTEMBER 30.—**Abercynon.**—SHOP.—Erection of shop premises at Abercynon, for the Ynysybwl Co-operative Society, Ltd. Quantities of Messrs. Arthur Ll. Thomas & Gomer S. Morgan, architects, Pontypridd. Deposit, £2 2s.

* SEPTEMBER 30.—**Maghull.**—COTTAGES.—The Board of Control invite tenders for erection of six pairs of cottages.

SEPTEMBER 30.—**Manchester.**—FLOORS.—Relaying of boarded floors at the schools at Swinton, near Manchester, for the Board of Guardians. Specifications of Mr. A. J. Murgatroyd, architect, 23, Strutt-street, Manchester. Deposit, 10s. 6d.

SEPTEMBER 30.—**Manchester.**—PAINTING.—Painting the outside of the Infirmary, etc., at the Institution at Crumpsall, Manchester, for the Board of Guardians. Specifications of Mr. A. J. Murgatroyd, architect, 23, Strutt-street, Manchester. Deposit, 10s. 6d.

SEPTEMBER 30.—**Ticehurst.**—ADDITIONS.—Additions and alterations at the Workhouse, Flimwell, near Ticehurst. Specifications of Mr. G. B. Chambers, Master, at the Workhouse. Deposit, 10s.

OCTOBER 1.—**Cork.**—SANITARY ANNEXE.—For construction of sanitary annexe at the boys' school buildings at Workhouse, for the Cork Board of Guardians. Mr. J. Cotter, Clerk to the Guardians.

OCTOBER 1.—**Liverpool.**—PAINTING.—For painting Cottage Homes, Fazakerley, for the West Derby B.G. Specifications of Mr. Harris P. Cleaver, Union Clerk, Union Offices, Brougham-terrace, Liverpool.

OCTOBER 1.—**Thelbridge.**—FARMHOUSE.—Rebuilding Charnaford Farmhouse. Tenders to Mr. A. Davey, Charnaford Farm, Thelbridge.

OCTOBER 3.—**Dartford.**—EXTENSION.—Extension of the electricity works, Dartford. Quantities of the Surveyor, Council Offices, Dartford. Deposit, £3 3s.

OCTOBER 3.—**Menai Bridge.**—HOUSES.—Erection of workmen's dwellings at New-street, Menai Bridge, for the U.D.C. Specifications of Mr. W. Owen, Surveyor, Dale-street, Menai Bridge.

OCTOBER 3.—**Saddleworth.**—WALL.—Building a retaining wall adjoining the River Tame at Greenfield Outfall Works, for the Saddleworth U.D.C. Specifications of the Surveyor, Council Office, Uppermill, near Oldham.

OCTOBER 3.—**St. Annes.**—WALLS, ETC.—Extending the stone and palisade wall from St. George's-square, along Beach-road and Back St. Andrew's-road North, and for the erection of a similar wall and palisade from St. George's-square to Clifton-drive, for the St. Annes-on-the-Sea U.D.C. Specifications of the Surveyor, Council Offices, St. Annes-on-the-Sea.

OCTOBER 3.—**Sheffield.**—RIVER WORKS, ETC.—Works in connection with the covering of the River Sheaf, Sheffield, consisting of bridge widening, Exchange-street; covering of River Sheaf in reinforced concrete; new weir across river; new bridge and retaining wall, New-street. Particulars of the City Engineer, Town Hall, Sheffield. Deposit, £1.

* OCTOBER 3.—**Staffordshire.**—ENGINEERING SCHOOL.—The Staffordshire E.C. invite tenders for erection of an engineering school.

OCTOBER 5.—**Armley.**—ALTERATIONS, ETC.—For alterations and additions at the nurses' home at the Workhouse, Armley, for the Bramley Board of Guardians. Quantities of Messrs. F. W. Rhodes & Son, architects, Upper Wortle, Leeds.

OCTOBER 5.—**Belfast.**—ABUTMENTS, ETC.—Building of abutments and staircases for a footbridge at Lower Windsor-avenue, near Belfast, for the Great Northern Railway Company (Ireland). Quantities of Mr. T. Morrison, Secretary, Amiens-street Terminus, Dublin. Deposit, £1 1s.

OCTOBER 5.—**Blackburn.**—DISPENSARY.—Erection of tuberculosis dispensary, etc., for the Corporation. Quantities of Mr. W Stubbs, Borough Engineer, Municipal Offices, Blackburn.

OCTOBER 5.—**Devizes.**—DWELLINGS.—Erection of six workmen's dwellings in pairs at Potterne, for the Devizes R.D.C. Specifications of Mr. O. Sheppard, Clerk, Devizes.

OCTOBER 5.—**Exeter.**—HOUSES.—Erection of fourteen blocks of houses and flats at Pince's Nursery, St. Thomas. Quantities of the City Surveyor, No. 6, Southernhay West, Exeter. Deposit, £2 2s.

OCTOBER 5.—**Heywood.**—EXTENSIONS, ETC.—For extensions at electricity works and sub-station, for the Corporation. Quantities of Mr. J. B. Nuttall, Borough Surveyor, Heywood. Deposit, £1 1s.

* OCTOBER 6.—**Sevenoaks.**—SIXTEEN COTTAGES.—The Sevenoaks U.D.C. invite tenders for erection of sixteen cottages.

OCTOBER 7.—**Sheffield.**—EXTENSION.—Extension of the City Hospital, Lodge Moor, comprising seven new ward blocks, receiving, operating, and discharge blocks, and administrative buildings. Quantities of the City Architect, Town Hall, Sheffield.

OCTOBER 7.—**Stratford-on-Avon.**—COTTAGES.—Erection of thirty-six workmen's cottages, on land near Birmingham-road; also for the construction of a short street thereto. Quantities of Mr. Roden Dixon, A.M.Inst.C.E., Borough Surveyor, Municipal Offices, Stratford-upon-Avon. Deposit, £3.

OCTOBER 8.—**Ashford.**—ADDITIONS.—Additions to the administration block at the Warren Isolation Hospitals, Warren-lane, Ashford. Specification of Mr. Wm Terrill, Surveyor, 5, North-street, Ashford, Kent

OCTOBER 8.—**Stroud.**—HOSPITAL BLOCK.—Erection of tuberculosis block on site adjoining Isolation Hospital, Stroud, for the Stroud Joint Hospital Board. Applications by intending contractors to be sent to Mr. S. P. Milnes, architect, 7, Rowcroft, Stroud, by September 26. Deposit, £1 1s.

OCTOBER 9.—**Canterbury.**—ALTERATIONS.—Alterations and additions at the Baptist Church, St. George's-place, Canterbury. Specification of Messrs. Jennings & Gray, architects, Canterbury.

OCTOBER 9.—**Sharlston.**—SCHOOL.—Erection of school at Sharlston, for the West Riding Education Committee. Quantities of the Education Architect, County Hall, Wakefield. Deposit, £1.

OCTOBER 9.—**Tottenham.**—FENCING.—The Tottenham and Wood Green Burial Board invite tenders for fencing work at the Cemetery, Church-lane, Tottenham. Specification of the architect, Mr. J. C. S. Mummery, 13, Fitzroy-square, W.

OCTOBER 9.—**Whitehaven.**—ALTERATIONS.—For alterations at the Children's Homes, Rose-hill, Harrington, and St. Bees, for the Whitehaven Board of Guardians. Specifications of Mr. T. Boyd, 53, Queen-street, Whitehaven.

OCTOBER 10.—**Dublin.**—VARIOUS.—Erecting ablution-room, bathrooms, kitchen, etc., at the Royal Irish Constabulary Depôt, Phœnix Park, Dublin. Quantities of Mr. H. Williams, Secretary, Office of Public Works, Dublin. Deposit, £1.

* OCTOBER 15.—**Colwyn Bay.**—POWER-STATION.—The Colwyn Bay and Colwyn U.D.C. invite tenders for erection of an electric power-station.

* OCTOBER 17.—**Limpsfield.**—DWELLINGS.—The Godstone R.D.C. invite tenders for erection of ten working-class dwellings.

NO DATE.—**Baildon.**—HOUSE.—Excavator's and mason's, carpenter's and joiner's, plumber's, tiler's and plasterer's work required in the erection of a residence in the West-lane, Baildon. Names to the architects, Messrs. Nunns & Bracewell, Bank-chambers, Bingley.

NO DATE.—**Bathgate.**—HOUSES.—Erection of twenty-four dwellinghouses, for the T.C. Quantities of the Burgh Surveyor.

NO DATE.—**Beccles.**—HUTS.—For huts (wood and tarred canvas) within six weeks for the accommodation of 1,000 men and 2,000 horses in the neighbourhood of Beccles. Specifications, etc., at the office of the Welsh Border Mounted Brigade, King's Head Hotel, Bungay.

NO DATE.—**Coventry.**—ALTERATIONS.—Alterations to the house, No. 55, Hill-street, Coventry, for the Board of Guardians. Particulars of the architect Mr. T. F. Tickner, F.R.I.B.A., High-street, Coventry.

NO DATE.—**Dewsbury.**—HOUSES.—Erection of two houses in Northfields. Specifications from Mr. S. Waddington, Manor-street, Dewsbury.

NO DATE.—**Grimsby.**—HUTS.—Erection of wooden buildings to form a hutted camp. Specifications of Major G. L. Bennett, Artillery Barracks, Grimsby.

NO DATE.—**Pembroke.**—HOUSES.—Construction of roads, sewers, buildings, electric lighting, and other works in connection with the erection of fifty-seven dwellings for the working classes, on sites at Ringsend, for the Pembroke U.D.C. Quantities of Mr. J. C. Manly, Clerk to the Council, Town Hall, Ballsbridge, Pembroke, Co. Dublin. Deposit, £1 for each section.

NO DATE.—**Wallasey.**—EXTENSION.—For extension of the generating-station of the Corporation. Particulars of the Electrical Engineer, Sea View-road, Wallasey.

FURNITURE, MATERIALS, etc.

* SEPTEMBER 26.—**Crieff.**—TUMBLER CART.—Supply of a tumbler cart, capacity 160 to 180 gallons, for Crieff T.C. Mr. A. Watt Allinson, Burgh Engineer.

SEPTEMBER 28.—**Ashton-under-Lyne.**—SLAG.—Supply to the Corporation of 9,200 cubic yds. of artificially prepared blast furnace slag. Specification from the Engineer, Mr. J. Rowbottom, Town Hall, Ashton-under-Lyne.

SEPTEMBER 28.—**London.**—TURPENTINE.—The Commissioners of H.M. Works, etc., invite tenders for the supply of turpentine (genuine American spirit) during a period of six months or one year. Forms of tender of the Controller of Supplies, H.M. Office of Works, 18, Queen Anne's-gate, London, S.W.

SEPTEMBER 29.—**Cowes.**—CEMENT.—Supply to the Cowes U.D.C. of Portland cement. Forms of tender from Mr. John W. Webster, Engineer and Surveyor, Cowes, I.W.

SEPTEMBER 29.—**Cowes.**—ROAD MATERIAL.—Supply of broken granite and other road material, for the Cowes U.D.C. Forms of tender from Mr. John W. Webster, Engineer and Surveyor, Cowes, I.W.

[Those with an asterisk (*) are advertised in this issue.]

FURNITURE, etc.—*continued.*

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

SEPTEMBER 29.—**Leatherhead.**—GRANITE, ETC.—Broken granite and steam rolling and scarifying, for one year, for the Leatherhead U.D.C. Specifications of Mr. Sidney R. Drake, Surveyor, Council Offices, Leatherhead.

SEPTEMBER 30. — **Littlehampton.** — ROAD MATERIAL.—Supply of road material to the U.D.C. Forms of tender of Mr. H. Howard, Surveyor, Council Offices, Littlehampton.

SEPTEMBER 30.—**Paddington.**—TIMBER.—Supply of English ash butts, elm butts, planks and boards, and oak butts, for the Great Western Railway Company. Specification of Mr. A. E. Bolter, Secretary, Paddington Station, London.

OCTOBER 1.—**Aberdeen.**—MATERIALS.—Supply to the Aberdeen Harbour Commissioners for one year of steel and iron, ironmongery, crane chains, cast-iron work, timber, plumber work, brass and copper work, painter work, stones and road metal, bricks and drain pipes, oils, slates, etc. Schedules at the Harbour Engineer's Office, Aberdeen.

OCTOBER 1. — **Manchester.** — MATERIALS. — Supply of stores to the Lancashire and Yorkshire Railway Company for twelve months. Forms of tender of Mr. Waring, Stores Department, Osborne-street, Manchester.

OCTOBER 1.—**West Ham.**—MATERIALS.—Supply to the Board of Guardians of electrical fittings, oils, engineer's sundries, oils and colours, etc. Forms of tender of Mr. T. Smith, Clerk, Union-road, Leytonstone.

ENGINEERING, IRON, AND STEEL.

SEPTEMBER 28.—**Aylesbury.**—PIPES, ETC.—(*a*) Supply of 4in. sluice valves; (*b*) supply of 4-in. cast-iron pipes; (*c*) providing and fixing weather board fencing. Specifications of Mr. W. H. Taylor, Engineer, Town Hall, Aylesbury.

SEPTEMBER 28.—**Islington.** ELECTRICAL INSTALLATION.—Electrical installation at the Gifford-street Elementary School, Caledonian-road, Islington, N., comprising about 215 wiring points and 285 lights. Specification, etc., from the Chief Engineer of the Council, Mr. M. G. W. Humphreys, at the County Hall, Spring-gardens S.W. Deposit, £1.

SEPTEMBER 28. — **Manchester.** — HEATING APPARATUS.—Heating apparatus and hot-water supply at four ward pavilions, Monsall Hospital. Particulars of the City Architect, Town Hall. Deposit, £1 1s.

SEPTEMBER 28. — **Manchester.** — HEATING APPARATUS.—Heating apparatus and hot-water supply at Phthisis Offices, Hardman-street. Particulars of the City Architect, Town Hall. Deposit, £1 1s.

SEPTEMBER 28.—**Selby.**—BRIDGE WORK, ETC.—For timber protective works, including piling to Cawood Bridge, over the River Ouse, near Selby, for the West Riding C.C. Quantities of Mr. F. G. Carpenter, Surveyor, County Hall, Wakefield. Deposit, £1.

SEPTEMBER 29.—**India.**—BRIDGE WORK.—The Secretary of State for India in Council invites tenders for bridge work. Conditions of contract of the Director-General of Stores, India Office, Whitehall, S.W.

SEPTEMBER 29.—**Warrington.**—CABLE.—Supply of high-tension cable. Specification of Mr. F. V. L. Mathias, Borough Electrical and Tramways Engineer, Howley, Warrington. Deposit, £1 1s.

SEPTEMBER 30.—**Bridgend.**—BOILER WORK.—Covering of two Lancashire boilers and steam pipes at Angelton Asylum, Bridgend, Glamorgan. Particulars of Mr. W. E. R. Allen, Clerk of the Committee of Visitors, Glamorgan County Hall, Cardiff.

SEPTEMBER 30.—**Goole.**—EXHAUSTER.—Provision and erection of an exhauster at the Council's gasworks, Goole. Specification of Mr. J. Fazakerley, Gasworks, Goole.

SEPTEMBER 30.—**Hamilton.**—BRIDGE WIDENING.—The District Committee of the Middle Ward of the County of Lanark invite tenders for (1) general works and (2) steelwork in connection with a proposed improvement and widening of Holin Forge Bridge, carrying Carluke Railway over the South Calder Water between Motherwell and Bellshill. Schedules of Mr. Robert Spittal, Road Surveyor, Hamilton.

SEPTEMBER 30.—**India.**—RAILWAY MATERIAL.—Supply of locomotive engines and tenders, broad gauge, goods, 16 "K" class, superheated, for the South Indian Railway Company, Ltd. Specifications of Mr. V. E. De Broe, M.Inst.C.E., Company's Offices, 91, York-street, Westminster, S.W. Charge, £2.

SEPTEMBER 30. — **Manchester.** — HEATING APPARATUS.—Providing and fixing low-pressure heating apparatus at the Heald-place Municipal School, Rusholme, Manchester. Quantities at the Education Offices, Deansgate, Manchester. Deposit, £1 1s.

* OCTOBER 8. — **St. Pancras.** — HEATING APPARATUS, ETC.—The St. Pancras Guardians invite tenders for supply of heating apparatus.

OCTOBER 9.—**Hornsey.**—CONVERTER SETS.—Supply and erection of two rotary or motor converter sets, etc. Forms of tender, etc., of the Borough Electrical Engineer, Electricity Works, Tottenham-lane, Hornsey. Deposit, 10s .6d.

OCTOBER 10.—**Southampton.**—BOILER.—Supply and erection of a dish-ended Cornish boiler, with setting, steam pipes, and fittings, at the Workhouse, St. Mary-street, Southampton. Specification of Mr. A. J. Walden, Clerk, Guardians' Offices, Southampton. Deposit, £1 1s.

OCTOBER 13.—**Pontypridd.**—ELECTRIC INSTALLATION.—For installation of electric light at the Llwynypia Homes for the Pontypridd B.G. Specification from Mr. William Spickett, Clerk, Union Offices, Pontypridd. Deposit, £2 2s.

OCTOBER 13.—**South Australia.**—PLANT.—The Public Works Department of South Australia invite tenders for the supply of plant required in connection with the Murray River improvement works. A list of plant required can be seen at the Commercial Intelligence Branch of the Board of Trade, 73, Basinghall-street, E.C.

NOVEMBER 4.—**Australia.**—COPPER TUBES, ETC.—Supply of seamless copper tubes for locomotives and copper sheets, for the Victorian Government Railways. Specifications to be seen at the Commercial Intelligence Branch of the Board of Trade, 73, Basinghall-street, E.C.

NOVEMBER 25.—**Australia.**—BATTERY SIGNAL MACHINES.—Supply of battery signal machines, for the Victorian Government railways. Specifications to be seen at the Commercial Intelligence Branch of the Board of Trade, 73, Basinghall-street, E.C.

ROAD, SANITARY, AND WATER WORKS.

SEPTEMBER 28.—**Bailieborough.**—WELL, ETC.—Sinking well and erecting pump at Crossreagh, for the Bailieborough R.D.C. Mr. Hugh Clarke, Clerk, Workhouse, Bailieborough.

SEPTEMBER 28.—**Mullagh.**—PUMP.—Erection of a pump at Rosehill Cottages, Mullagh, for the Bailieborough R.D.C. Specification of Mr. Hugh Clarke, Clerk, Poor Law Office, Bailieborough.

SEPTEMBER 29. — **Darton.** — WATER MAINS.—Laying of about 3,600 lin. yds. of 3-in. and 150 yds. of 2-in. cast-iron water mains, etc., for the U.D.C. Quantities of Mr. S. Wilkinson, Surveyor, Darton.

SEPTEMBER 29. — **Llandaff.** — STREET WORKS.—For street-improvement works in Eddington-avenue (part of), Flaxland-avenue (part of), Longspears-avenue (part of), and lanes north of Whitchurch-road, at Gabalfa, for the Llandaff and Dinas Powis R.D.C. Quantities of the Surveyor, Mr. James Holden, A.M.Inst.C.E., Park House, 20, Park-place, Cardiff.

SEPTEMBER 30.—**St. Austell.**—TUNNEL AND SEWER.—Construction of a tunnel, 500 yds, in length or thereabouts, with the necessary air shafts, and for the laying of a stoneware pipe sewer therein and extension of the same, some 2,000 yds. in all, etc., so as to connect the sewerage system of Mount Charles with that of Charlestown, for the St. Austell R.D.C. Specifications of Mr. W. H. Moffatt, C.S.I., Surveyor, Council Offices, St. Austell, or at Messrs. Henderson & Son's, the engineers, Lemon Quay, Truro. Deposit, £3 3s.

SEPTEMBER 30.—**Westhoughton.** SEWAGE DISPOSAL.—Extension of Rogers's sewage disposal works, for the Westhoughton U.D.C. Quantities from Mr. G. Hayes, Engineer and Surveyor to the Council, Town Hall, Westhoughton. Deposit, 10s.

OCTOBER 1.—**Manchester.**—GROUNDWORK.—Extension to Delamere-street Recreation Ground, Openshaw. Quantities at the City Surveyor's Office, Town Hall, Manchester. Deposit, £2 2s.

OCTOBER 2.—**Sale.**—ROAD-MAKING, ETC.—For fencing, road-making, etc., in connection with the laying-out of land for allotments off Winstanley-road, for the Sale U.D.C. Quantities of the Surveyor to the Council.

OCTOBER 3.—**Bolsover.**—STREET WORKS.—For making-up Woodhouse-street, for the Bolsover U.D.C. Quantities of Mr. W. G. H. Browne, Engineer, Council Offices, Bolsover.

OCTOBER 3.—**Elgin.**—WATER SUPPLY.—Works in connection with new water supply to Collie Farm, etc. Schedules of Mr. Angus Cameron, Factor, Seafield Estates Office, Elgin.

OCTOBER 3.—**Wath-upon-Dearne.**—SEWAGE DISPOSAL.—Alteration and reconstruction of the sewage disposal works at Common-lane, Wath-upon-Dearne. Quantities of Mr. J. H. Drew, Engineer to the Council, Town Hall, Wath-upon-Dearne. Deposit, £5 5s.

OCTOBER 5.—**Prestwich.**—SEWER, ETC.—Improvement of Poppythorn-lane from Bury New-road to the railway bridge, and the construction of a 12-in. sewer in Ostrich-lane, for the U.D.C. of Prestwich. Quantities of the Surveyor, Council Offices, Prestwich, near Manchester. Deposit, £1 1s.

OCTOBER 6.—**Salford.**—STREET WORKS.—For sewering, paving, and flagging works. Quantities from Borough Engineer, Town Hall, Salford.

OCTOBER 7.—**Hornsey.**—STREET WORKS.—For making up the passageway at the rear of St. James's-parade, Muswell Hill. Forms of tender, etc., from Mr. E. J. Lovegrove, Borough Engineer, Town Hall, Highgate.

OCTOBER 9. — **Preston.** — SEWERAGE WORKS.—Taking up present 15-in., 12-in., and 9-in. earthenware pipes, and relaying in cast-iron and earthenware socket pipes, for the Preston R.D.C. Quantities of Messrs. Myers, Veevers, & Myers, engineers, 15, Chapel-street, Preston. Deposit, £1 1s.

OCTOBER 13.—**Brampton.**—SEWAGE DISPOSAL.—Construction of sewage disposal works, etc., at Castle Carrock, Cumberland, for the Brampton R.D.C. Specifications of the engineers, Messrs. Taylor & Willin, Cathedral-buildings, Newcastle-on-Tyne. Deposit, £3 3s.

OCTOBER 19.—**Romford.**—SEWERAGE, ETC.—Construction of surface-water sewers and for the making-up of certain streets or parts of streets in the parish of Dagenham, for the Romford R.D.C. Quantities of Mr. W. J. Grant, Surveyor, 16A, South-street, Romford. Deposit, £2 2s.

OCTOBER 21. — **Leeds.** — SEWAGE DISPOSAL.—(1) Three screening chambers, screen-house, three detritus pits, two mixing chambers, distributing chamber, and all accessories; (2) four precipitation tanks, main gauging chamber, storm overflow, storm overflow culvert and outlet, etc.; (3) 18 acres of bacteria beds, complete with silt mains, effluent channels and culverts, and gauging chambers, etc., including the laying of cast-iron feed mains. Quantities of the Sewerage Engineer, Mr. Geo. A. Hart M.Inst.C.E., 26, Great George-street, Leeds. Deposit, £10.

Public Appointments.

* OCTOBER 3.—ARCHITECTURAL ASSISTANT.—The Derbyshire Education Committee invite applications for the above temporary posts. Salary at the rate of £120 per annum

* OCTOBER 3. — TEMPORARY ASSISTANT. — The L.C.C. invite applications for the above temporary post. Salary not stated.

[Those with an asterisk (*) are advertised in this issue.]

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PRICES CURRENT OF MATERIALS.

[Owing to the exceptional circumstances which prevail at the present time, prices of materials should be confirmed by inquiry.]

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the highest or lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

	£ s. d.
Per 1000 Alongside, in River.	
Best Stocks	1 16 6
Picked Stocks for Facings	2 10 0

BRICKS, &c. (*Continued*).

Per 1000, Delivered at Railway Depôt.

	£ s. d.		£ s. d.
Flettons	1 14 0	Best Blue Pressed Staffordshire	3 15 0
Best Fareham Red	3 12 0	Do. Bullnose	4 0 0
Best Red Pressed Ruabon Facing	5 0 0	Best Stourbridge Fire Bricks	4 0 0

GLAZED BRICKS—

Best White, Ivory, and Salt Glazed Stretchers	12 0 0	Double Headers	15 10 0
Headers	12 10 0	One Side and two Ends	19 10 0
Quoins, Bullnose and 4½ in. Flats	16 10 0	Two Sides and one End	20 10 0
D'ble Str'tch'rs	18 10 0	Splays and Squints	18 0 0

Second Quality £1 10s. per 1000 less than best.

	s. d.	
Thames and Pit Sand	7 3	per yard, delivered.
Thames Ballast	5 9	" "
Best Portland Cement	37 0	per ton, "
Best Ground Blue Lias Lime	20 0	" "

NOTE—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime ..... 14s. 0d. per yard, delivered.
Stourbridge Fireclay in sacks 27s. 0d. per ton, at rly. dpt.

STONE.

Per Ft. Cube.

	s. d.
BATH STONE—delivered on road waggons, Paddington Depôt	1 7½
Do. do. delivered on road waggons, Nine Elms Depôt	1 9½
PORTLAND STONE (20 ft. average)—	
Brown Whitbed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2 4½
White Basebed, delivered on road waggons Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2 6½

Per Ft. Cube, delivered at Railway Depôt.

	s. d.		s. d.
Ancaster in blocks	1 10	Closeburn Red Freestone	2 0
Beer in blocks	1 6	Red Mansfield Freestone	2 4
Greenshill in blocks	1 10	Talacre & Gwespyr Stone	2 4
Darley Dale in blocks	2 4		
Red Corsehill in blocks	2 3		

YORK STONE—*Robin Hood Quality.*

	s. d.
Per Ft. Cube, Delivered at Railway Depôt.	
Scappled random blocks	2 10
Per Ft. Super., Delivered at Railway Depôt.	
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2 8
6 in. rubbed two sides ditto, ditto	3 6
3 in. sawn two sides slabs (random sizes)	0 11½
2 in. to 2½ in. sawn one side slabs (random sizes)	0 7
1½ in. to 2 in. ditto, ditto	0 6

STONE (*Continued*).

	£ s. d.
HARD YORK— Per Ft. Cube, Delivered at Railway Depôt.	s. d.
Sappled random blocks	3 0
Per Ft. Super., Delivered at Railway Depôt.	
4 in. sawn two sides landing to sizes (under 40 ft. super.)	2 8
6 in. rubbed two sides ditto	3 0
3 in. sawn two sides slabs (random sizes)	1 2
2 in. self-faced random flags	0 5

SLATES.

Per 1000 of 1200 at Railway Depôt.

In. In.	£ s. d.	In. In.	£ s. d.
20 x 10 best blue Bangor	13 2 6	20 x 10 best Eureka unfading green	15 17 6
20 x 12 ditto	13 17 6	20 x 12 ditto	18 7 6
20 x 10 1st q'lity ditto	13 0 0	18 x 10 ditto	13 5 0
20 x 12 ditto	13 15 0	16 x 8 ditto	10 5 0
16 x 8 ditto	7 5 0	20 x 10 permanent green	12 12 6
22 x 10 best blue Portmadoc	12 12 6	18 x 10 ditto	10 12 6
16 x 8 ditto	6 12 6	16 x 8 ditto	7 12 6

TILES.

At Railway Depôt.

	s. d.		s. d.
Best plain red roofing (per 1000)	42 0	Best "Hartshill" brand, plain sand-faced (per 1000)	45 0
Hip and Valley (per doz.)	3 7	Do. pressed (per 1000)	42 6
Best Broseley (per 1000)	50 0	Do. Ornamental (per 1000)	47 6
Do. Ornamental (per 1000)	52 6	Hip (per doz.)	4 0
Hip and Valley (per doz.)	4 0	Valley (per doz)	3 6
Best Ruabon red, brown, or brindle (Edw'ds) (pr1000)	57 6	Staffords. (Hanley) Reds or Brindled (per 1000)	42 6
Do. Ornamental (per 1000)	60 0	Hand-made sand-faced (per 1000)	45 0
Hip (per doz.)	4 0	Hip (per doz.)	4 0
Valley (per doz)	3 0	Valley (per doz)	3 6

WOOD.

BUILDING WOOD.	At per standard. £ s. d.		£ s. d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in.	17 5 0	..	18 15 0
Deals: best 3 in. by 9 in.	17 5 0	..	18 5 0
Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in.	14 12 6	..	15 12 6
Battens: best 2½ by 6 and 3 by 6	0 10 0		less than 7 in. and 8 in.
Deals: seconds	1 0 0		less than best
Battens: seconds	0 10 0	"	"
2 in. by 4 in. and 2 in. by 6 in.	13 5 0	..	14 5 0
2 in. by 4½ in. and 2 in. by 5 in.	12 2 6	..	13 2 6
Foreign Sawn Boards— 1 in. and 1½ in. by 7 in.	0 10 0		more than battens.
½ in.	1 0 0		"
Fir timber: best middling Danzig or Memel (average specification)	At per load of 50 ft. 6 0 0	..	7 5 0
Seconds	5 7 6	..	6 17 6
Small timber (8 in. to 10 in.)	4 12 6	..	4 17 6
Small timber (6 in. to 8 in.)	3 17 6	..	4 5 0
Swedish balks	3 5 0	..	3 12 6
Pitch-pine timber (30 ft. average	7 10 0	..	8 10 0

JOINERS' WOOD.	At per standard.		
White Sea: first yellow deals, 3 in. by 11 in.	29 15 0	..	31 0 0
3 in. by 9 in.	27 12 6	..	29 0 0
Battens, 2½ in. and 3 in. by 7 in.	21 5 0	..	22 5 0
Second yellow deals, 3 in. by 11 in.	24 15 0	..	25 15 0
Do. 3 in. by 9 in.	23 0 0	..	24 0 0
Battens, 2½ in. and 3 in. by 7 in.	17 5 0	..	18 5 0
Third yellow deals, 3 in. by 11 in. and 9 in.	18 5 0	..	19 5 0
Battens, 2½ in. and 3 in. by 7 in.	16 0 0	..	17 0 0
Petersburg: first yellow deals, 3 in. by 11 in.	26 10 0	..	27 10 0
Do. 3 in. by 9 in.	23 0 0	..	24 0 0
Battens	17 5 0	..	18 5 0
Second yellow deals, 3 in. by 11 in.	19 5 0	..	20 5 0
Do. 3 in. by 9 in.	18 7 6	..	19 7 6
Battens	—	..	—
Third yellow deals, 3 in. by 11 in.	16 0 0	..	17 0 0
Do. 3 in. by 9 in.	15 10 0	..	16 10 0
Battens	13 5 0	..	14 5 0
White Sea and Petersburg— First white deals, 3 in. by 11 in.	19 5 0	..	20 5 0
First white deals, 3 in. by 9 in.	17 2 6	..	18 2 6
Battens	15 0 0	..	15 10 0
Second white deals, 3 in. by 11 in.	17 2 6	..	18 2 6
Second white deals, 3 in. by 9 in.	15 0 0	..	16 0 0
Battens	13 15 0	..	14 5 0
Pitch-pine: deals	30 15 0	..	32 15 0
Under 2 in. thick extra	0 10 0	..	1 0 0
Columbian or Oregon Pine, best quality	26 0 0	..	28 0 0
Yellow Pine—First, regular sizes	54 0 0		upwards.
Oddments	37 0 0		"
Seconds, regular sizes	38 10 0		"
Oddments	33 0 0		"
Kauri Pine—Planks per ft. cube	0 6 6	..	0 7 6
Danzig and Stettin Oak Logs— Large, per ft. cube	0 4 0	..	0 5 0
Small " "	0 3 6	..	0 4 0
Wainscot Oak Logs, per ft. cube	0 9 6	..	0 11 0
Dry Wainscot Oak, per ft. super. as inch	0 0 11	..	0 1 3
¼ in. do. do.	0 0 10	..	0 0 11

WOOD (*Continued*).

JOINERS' WOOD (*Continued*)—	£ s. d.		£ s. d.
Dry Mahogany — Honduras, Tabasco, per ft. super. as inch	0 0 11	..	0 1 4
Selected, Figury, per ft. super. as inch	0 1 6	..	0 2 6
Cuba Mahogany	0 1 6	..	0 2 0
Dry Walnut, American, per ft. super. as inch	0 0 11	..	upwards. 0 1 3
French, "Italian," Walnut	0 0 11	..	0 1 6
Teak, per load (Rangoon or Moulmein)	28 0 0	..	34 0 0
Do., do. (Java)	24 0 0	..	27 0 0
American Whitewood planks, per ft. cube	0 6 6	..	0 7 6
Prepared Flooring, etc.—	Per square.		
1 in. by 7 in. yellow, planed and shot	0 15 6	..	0 18 0
1 in. by 7 in. yellow, planed and matched	0 16 0	..	0 19 0
1¼ in. by 7 in. yellow, planed and matched	0 18 6	..	1 3 0
1 in. by 7 in. white, planed and shot	0 15 0	..	0 17 0
1 in. by 7 in. white, planed and matched	0 15 6	..	0 17 6
1¼ in. by 7 in. white, planed and matched	0 17 6	..	0 19 6
¼ in. by 7 in. yellow, matched and beaded or V-jointed boards	0 13 6	..	0 16 0
1 in. by 7 in. " "	0 16 0	..	0 19 6
¼ in. by 7 in. white " "	0 13 0	..	0 15 0
1 in. by 7 in. " "	0 15 6	..	0 16 6

6 in. at 6d. to 9d. per square less than 7 in.

JOISTS, GIRDERS, &c.	In London or delivered Railway Vans, per ton. £ s. d.		£ s. d.
Rolled Steel Joists, ordinary sections	9 10 0	..	10 10 0
Compound Girders, ordinary sections	12 0 0	..	13 0 0
Steel Compound Stanchions	13 0 0	..	15 0 0
Angles, Tees, and Channels, ordinary sections	12 0 0	..	13 0 0
Flitch Plates	12 0 0	..	13 0 0
Cast Iron Columns & Stanchions, including ordinary patterns	9 0 0	..	10 0 0

METALS.

	Per ton, in London. £ s. d.		£ s. d.
IRON— Common Bars	9 10 0	..	10 0 0
Staffordshire Crown Bars, good merchant quality	9 15 0	..	10 5 0
Staffordshire "Marked Bars"	11 10 0	..	—
Mild Steel Bars	9 15 0	..	10 5 0
Hoop Iron, basis price	10 10 0	..	—
" " Galvanised	19 0 0	..	—
(* And upwards, according to size and gauge.)			
Sheet Iron Black— Ordinary sizes to 20 g.	10 15 0	..	—
" " 24 g.	11 15 0	..	—
" " 26 g.	13 5 0	..	—
Sheet Iron, Galvanised, flat, ordinary quality— Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g.	17 0 0	..	—
Ordinary sizes to 22 g. and 24 g.	17 10 0	..	—
Ordinary sizes to 26 g.	18 10 0	..	—
Sheet Iron, Galvanised, flat, best quality— Ordinary sizes to 20 g.	20 0 0	..	—
" " 22 g. and 24 g.	20 10 0	..	—
Ordinary sizes to 26 g.	22 0 0	..	—
Galvanised Corrugated Sheets— Ordinary sizes, 6 ft. to 8 ft. 20 g.	16 10 0	..	—
Ordinary sizes, 22 g. and 24 g.	16 15 0	..	—
Ordinary sizes, 26 g.	18 5 0	..	—
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. to 20 g. and thicker	13 10 0	..	—*
Best Soft Steel Sheets, 22 g. & 24 g.	14 10 0	..	—
Best Soft Steel Sheets, 26 g.	16 10 0	..	—
Cut Nails, 3 in. to 6 in. (Under 3 in., usual trade extras.)	11 10 0	..	12 0 0

LEAD, &c. Delivered in London.	£ s. d.		
LEAD—Sheet, English, 4 lb. and up	25 0 0	..	—
Pipe in coils	25 10 0	..	—
Soil pipe	28 10 0	..	—
Compo pipe	28 10 0	..	—
ZINC— Sheet—	In casks of 10 cwt. 50 0 0	..	—
COPPER— Strong Sheet per lb.	0 1 2	..	—
Thin " "	0 1 3	..	—
Copper nails "	0 1 2	..	—
Copper wire "	0 1 2	..	—
BRASS— Strong Sheet "	0 1 2	..	—
Thin "	0 1 3	..	—
TIN—English Ingots "	0 1 7	..	—
SOLDER—Plumbers' "	0 0 9	..	—
Tinmen's "	0 1 0	..	—
Blowpipe "	0 1 3	..	—

ENGLISH SHEET GLASS IN CRATES OF STOCK SIZES.*

Per Ft. Delivered.

15 oz. thirds	3d.	26 oz. fourths	4½d.
" fourths	2½d.	32 oz. thirds	6½d.
21 oz. thirds	4½d.	" fourths	5½d.
" fourths	3½d.	Fluted Sheet, 15 oz.	4d.
26 oz. thirds	4½d.	" 21 oz.	5d.

ENGLISH ROLLED PLATE IN CRATES OF STOCK SIZES.*

Per Ft. Delivered.

¼ Rolled plate	2½d.
¼ Rough rolled and rough cast plate	3d.
¼ Rough rolled and rough cast plate	3½d.
Figured Rolled, Oxford Rolled, Oceanic, Arctic, Muffled, and Rolled Cathedral, white	3½d.
Ditto, tinted	5½d.

* Not less than two crates.

OILS, &c.

		£ s. d.
Raw Linseed Oil in pipes	per gallon	0 2 5
" " " in barrels	"	0 2 6
" " " in drums	"	0 2 8
Boiled " " in barrels	"	0 2 8
" " " in drums	"	0 2 10
Turpentine in barrels	"	0 2 10
" in drums	"	0 3 1
Genuine Ground English White Lead, per ton (In not less than 5 cwt. casks.)		33 15 0
Red Lead, Dry	per ton	31 10 0
Best Linseed Oil Putty	per cwt.	0 10 0
Stockholm Tar	per barrel	1 12 0

VARNISHES, &c.

	Per gallon. £ s. d.
Fine Pale Oak Varnish	0 8 0
Pale Copal Oak	0 10 6
Superfine Pale Elastic Oak	0 12 6
Fine Extra Hard Church Oak	0 10 0
Superfine Hard-drying Oak, for seats of Churches	0 14 6
Fine Elastic Carriage	0 12 9
Superfine Pale Elastic Carriage	0 16 0
Fine Pale Maple	0 10 0
Finest Pale Durable Copal	0 18 6
Extra Pale French Oil	1 1 0
Eggshell Flating Varnish	0 18 0
White Pale Enamel	1 4 0
Extra Pale Paper	0 12 0
Best Japan Gold Size	0 10 0
Best Black Japan	0 16 0
Oak and Mahogany Stain	0 9 0
Brunswick Black	0 8 0
Berlin Black	0 16 0
Knotting	0 10 6
French and Brush Polish	0 10 0

[Owing to the exceptional circumstances which prevail at the present time, prices of materials should be confirmed by inquiry.]

TO CORRESPONDENTS.

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TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 6 p.m. *on Wednesday*. [N.B.—We cannot publish Tenders unless authenticated either by the architect or the building owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is stated, nor any list in which the lowest Tender is under 100*l.* unless in some exceptional cases and for special reasons.]

***Denotes accepted. †Denotes *provisionally* accepted.**

BARNET.—For the erection of a new police-station, for the Receiver for the Metropolitan Police District. Mr. J. Dixon Butler, F.R.I.B.A., Architect, New Scotland-yard, S.W. Quantities by Messrs. Thurgood & Chidgey, 8, Adelphi-terrace, W.C.:—

Holland & Hannen	£8,555	Newby Bros.	£7,896
Perry & Co.	8,243	Wall, Ltd.	7,722
Godson & Sons.	8,211	A. Monk	7,650
Dove Bros.	8,144	Willmott & Sons	7,592
Fairhead & Sons	8,119	Dickens	7,500
Patman & Fothering-ham	7,921	Sabey & Son	7,353

BIRSTALL.—For paving works at North-terrace, for the Urban District Council:—

Akeroyd & Sons, Birstall* £758

CHERTSEY.—For surface water drainage works at Byfleet, for the Chertsey Rural District Council:—

Hardy & Co., Woking* £1,780

EARBY.—Construction of sewage-disposal works, for the Urban District Council:—

Alterations to Tanks, etc. (*Contract* 1).

C. Collins & Co., Prestwich* £3,432

Pipes, etc. (*Contract* 2).

Ham, Baker, & Co., London* £415 1 5

Supply of Suction Gas Plant, etc. (*Contract* 3).

J. Wolstenholme & Son, Radcliffe* ... £309 12 9

EAST PRESTON.—Painting at the workhouse, for the Board of Guardians:—

J. Olliver & Sons, Brighton* £240

ERPINGHAM.—For erection of two new wards at the isolation hospital, for the Erpingham Rural District Council. Mr. A. R. Tuddenham, architect. Quantities by architect:—
H. Bullen, Cromer† £450

FARRINGDON.—Construction of sewer at Longworth, for the Farringdon Rural District Council:—
A. Cox & Sons, Abingdon* £355

HASTINGS.—For foundations and retaining walls, etc., for new hospital, for the Committee of the East Sussex Hospital. Messrs. J. Saxon Snell & Stanley A. Spoor, architects, 26, Great James-street, Bedford-row, W.C. Quantities by Mr. A. R. Evans, G.S.A., 11, Gray's Inn-place, W.C.:—

Trollope & Colls	£7,393 0 0
Eldridge & Cruttenden	6,623 0 0
F. Murray & Co.	6,435 6 8
J. Lester & Sons	6,377 0 0
J. Longley & Co.	6,198 0 0
S. Carey	6,170 0 0
Hutchinson & Co., St. Leonards-on-Sea*	5,886 0 0

HENDON.—For sewerage works in various roads, for the Urban District Council:—

Woodville-road.

T. Adams*	£2,389 16 6

St. Mary's road.

T. Adams*	£776 3 4

West Heath-road.

D. R. Paterson, Ltd.*	£1,567 3 2

Ashbourne-avenue.

T. Adams*	£2,239 2 8

The Ridge.

D. R. Paterson, Ltd.*	£1,299 4 3

Sunnyside.

T. Adams*	£542 0 2

Dingwall-gardens.

T. Adams*	£384 7 6

Blind-lane Sewer.

D. R. Paterson, Ltd.*	£249 6 6

Shirehall-lane.

D. R. Paterson, Ltd.*	£215 2 6

Brent Valley sewer.

H. Farrow*	£3,827 19 0

Temple Fortune Sewer.

F. G. Brummell*	£1,353 19 0

New Brent-street Sewer.

D. R. Paterson, Ltd.*	£349 16 6

ITCHEN.—For private street works for the Urban District Council:—

J. Douglas	£781
Road Maintenance and Supply Co., Ltd.	707
Osman & Co.*	634

KEIGHLEY.—For supply of cast iron cylinders required in the construction of the Lower Castle Reservoir, for the Corporation:—
Simpson & Co., Leicester* £373 19 9

KEIGHLEY.—For mason's work at Hainsworth Wood Recreation Ground, for the Corporation:—
J. Hird* £230 11 3

KEIGHLEY.—For supply and erection of fuel economiser at the Electricity works of the Corporation:—
E. Green & Son, Ltd.* £320

LICHFIELD.—For construction of Burntwood sewerage scheme, for the Lichfield Rural District Council:—
Child & Withers, Worcester* £7,234 15 0

MAIDSTONE.—For erection of Plain Bridge, Marden, for the Maidstone Rural District Council:—

Barden & Head	£205	S. F. Stanley & Sons, Marden*	£119
R. Corben	192		
C. T. Pearson	135		

MAIDSTONE.—For erection of Pike Fish Bridge, Marden, for the Maidstone Rural District Council:—

R. Corben	£209 0
Barden & Head, Maidstone*	205 0
S. F. Stanley & Sons	196 10

MAIDSTONE.—Erection of Barming Bridge, for the Maidstone Rural District Council:—

J. Shilbourne & Co.	£252 11 2
Robinson & Co.	189 4 5
T. H. Miller, West Farleigh*	151 10 0

NUNEATON. — For steam-roller, for the Town Council:—
T. Green & Sons, Ltd., Leeds* £480

ORSELL (Essex).—For the construction of a sewer, for the Orsell Rural District Council. Mr. Christo. her M. Shiner, A.R.I.B.A., Surveyor:—

H. J. Carter, Ltd.	£918 0 0	W. E. Walsham	£479 0 0
F. W. Marsh	568 18 4	G. Hayward	454 17 3
G. Brown	538 12 0	W. Jackson, Forest Gate*	397 10 9
Brown Bros.	497 10 11		

PENISTONE.—For water-supply works, for the Urban District Council:—
C. Chapman & Sons, Manchester.* Pump, £432; foundations and fixing, £125; and boiler, £175.

PERTH (Australia).—For structural steelwork for the new post-office at Perth, Western Australia:—
Frodingham Iron and Steel Co.* £30,000

PORTLAND.—Building six cottages at St. Martin's-road, for the Portland Urban District Council:—

J. Flower	£1,240	A. & S. Burden*	£1,200

READING.—For alterations to scattered homes in Milmen-road, for the Board of Guardians:—
O. Phillips & Son* £162

READING.—External painting at the workhouse, for the Board of Guardians:—
A. Lovegrove, Reading* £118 16

RHYL.—Erection of administrative block at the isolation hospital, for the Corporation:—
A. Torkington, Rhyl* £596

ST. GERMANS.—For erection of stone bridge at Ivebridge, for the Rural District Council:—

Fothergill Bros.	£395 10 8
W. Stephens	127 11 0
Runnalls & Sons, 1, Victoria-terrace, Liskeard, Cwl.*	124 10 0

SOUTHAMPTON.—For carrying-out of various street works, for the Corporation:—

Nursery-road.

J. Douglas, Southampton*	£244

Ashtree-road.

J. Douglas*	£747

Hillside-avenue.

J. Douglas*	£1,550

St. Katharine's-road.

J. Douglas*	£1,090

STOKE POGES.—Structural alterations and repairs at Council school, for the Bucks Education Committee:—
H. Street* ..... £217 and £73

WELLINGBOROUGH.—For erection of convenience, for the Urban District Council. Quantities by Mr. E. G. Harrison, Surveyor, Market square, Wellingborough:—

Hackaley Bros.	£392	E. Brown & Son, Ltd.*	£350
W. Stevens	365		

[All of Wellingborough.]

WEYMOUTH.—Alterations at men's lavatory on the esplanade, for the Corporation:—
Conway* £395

WEYMOUTH.—For stores, etc., at Sunnybank, for the Corporation:—

Jesty & Baker	£194 0	G. F. Bowering*	£138 17
A. E. Wheetman	167 0	E. J. Froom	110 0
J. A. Parsons, Ltd.	140 10		

WINDSOR.—For alterations at Albany House, for the Windsor Board of Guardians:—

T. W. Gosling	£450	E. Bampfylde	£390
W. Watson	439	Foreman Bros., Windsor*	359
A. J. Goodhall	370		
R. Love & Co.	368		

WINDSOR.—For drainage works at the Workhouse, for the Board of Guardians:—

W. Wa son	£234
T. W. Gosling, Old Windsor*	145

YSTRAD MYNACH.—Rebuilding of the Royal Oak Hotel, for Messrs. Giles & Harrap:—

Morgan Bros.	£2,600 0 0
J. Williams & Sons	2,428 0 0
J. Lloyd	2,275 0 0
J. Thomas	2,240 0 0
A. W. Julian, Bonvilston-road-yard, Pontypridd*	2,193 0 0
E. James	1,895 8 9

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